Content Platform Migrations

A Recommended Practice of the
National Information Standards Organization

Approved: November 18, 2021
Prepared by the NISO Content Platform Migrations Working Group

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Foreword

About this Recommended Practice

This project was initiated by NISO in 2019 in response to issues, identified by the scholarly communications community, that arise when publishers change content-hosting platforms. These migrations are complicated projects and involve many different organizations and stakeholders. A successful platform migration minimizes the disruption in a user's ability to access and retrieve the content during and after the migration process: Project participants agreed that improved communication between parties, to best support a user's journey to content, was the ultimate goal of their work.

Content migration projects track many actions, timelines, and parties. The Recommendations could be applied differently depending on the specific content migration, and therefore reviewing all recommendations presented in the document will provide a complete understanding of the suggested actions.

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Section 1: Introduction

1.1 Introduction and Guiding Principles

Achieving a smooth platform migration requires effort from multiple parties. There are typically four major stakeholder groups involved when a publisher moves content from one hosting platform to another.

1) The Publisher: the entity that is producing and publishing the content and that initiated a project to move the content from one hosting platform to another.

2) The Content Platform Vendors: the organizations responsible for the systems and services involved in hosting content. Both the prior and new Content Platform Vendors are involved in technical details of the migration. Note that this could be the publisher or an outside vendor. Unless otherwise noted, "Platform Vendor Responsibilities" in the Recommendations for Responsibilities area refers to the new Platform Vendor.

3) The Library and Library Consortia: the primary subscribing entity to the content. A major part of the effort in a successful content migration is ensuring that libraries and their patrons continue to have access to the content during and after the migration.

4) Library Solutions Providers: There are many other entities and solution providers that create or hold data or metadata relevant to the content being migrated. They may include data wranglers, usage statistics vendors, preservation services, discovery vendors, knowledge base and metadata providers, etc. These entities need to be made aware of the migration and updated appropriately during the process.

This Recommended Practice attempts to lay out the core concepts, approaches, and tasks to facilitate a successful migration with minimal disruption. The main document provides context, descriptions, and definitions. Each section concludes with recommendations related to each topic, with bulleted lists of example tasks for each stakeholder group. The recommendations are also provided as a Checklist in a spreadsheet, so they can be sorted, filtered, and customized (see Appendix G). Both versions of the Recommendations identify the stakeholder that is likely to have responsibility for a given task.

1.2 Use of This Recommended Practice by Publishers and Platform Vendors

Publishers and platform vendors who provide content to libraries are strongly encouraged to conform to the Content Platform Migrations Recommendations. These recommendations are intended to be applied regardless of the specific natures of the publisher, content platform vendor, and content. Conforming to the recommendations is not likely to result in any conflicts with contractual terms, intellectual property rights, the competitive marketplace between content platform vendors and/or publishers, or data privacy and protection laws and regulations. In case of any conflict, the laws, regulations, and contract terms between the parties involved in the migration will, of course, govern. However, publishers and content platform vendors are encouraged to use commercially reasonable efforts to ensure that the contracts governing platform migrations to which they are a party are consistent with these Recommendations.

1.3 Purpose and Scope

The goals of the Content Platform Migrations Recommended Practice ("Recommendations") are to promote a set of guidelines that apply whenever electronic content is migrated from one hosting platform to another, and to encourage the industry to embrace these recommendations as a baseline level of quality

and performance. The Recommendations are concerned entirely with the online provision of content, and not with print material. Reviewing all recommendations presented in the document will provide a complete understanding of the suggested actions, as they could be applied differently depending on the specific content migration project.

It should be noted that Content Platform Migrations are different from journal transfers from one publisher to another. In this case, the same publisher controls all of the content, but they are changing the technology used to provide the content online. In the latter case, one or more journals are being transferred from one publisher to another. NISO RP-24-2019, *Transfer Code of Practice (Version 4.0)* (http://www.niso.org/publications/rp-24-2019-transfer) covers guidelines for these types of transfers.

1.4 Terms and Definitions

The following terms, as used in this recommended practice, have the meanings indicated.

<u>Term</u>	<u>Definition</u>
Authentication	The act of identifying a user sufficiently to determine whether to authorize access to content or services. Usernames, IP Address, EZproxy, Athens, and Shibboleth are example authentication methods and services.
Composition vendor	An organization that digitizes content for publishers. Often used during a migration to normalize publisher content to the standard required by the new content platform.
Content	Online articles, e-books, streaming videos, or other digital information provided to libraries by publishers or aggregators.
Content aggregator	An entity that pulls together web content, applications, or both from online sources as a means of curating content for reuse or resale. Two types of content aggregators exist: 1. those who gather news and other materials from various sources for publication on their own websites, and 2. those who syndicate content, gathering and distributing material that suits their customers' needs. *(LexisNexis Glossary)*
Content platform	The website that belongs to a content provider or publisher where the purpose is to provide the tools and interfaces needed to organize and interact with content. In addition to the public facing website, there are usually content ingestion, administrative, reporting, and downstream content dissemination tools that comprise the full platform as well.
Content provider	A vendor—generally a publisher, aggregator, or full-text host—that offers full-text content for sale or lease to libraries. In the KBART context, this specifically does not include those who provide abstracting and indexing services, or linking and e-resource management services. *(KBART Glossary of Relevant Terms)*
COUNTER	A Code of Practice that publishers and vendors use to report usage of their electronic resources in a consistent way so that

	libraries can compare data received from different publishers and vendors. (*Project COUNTER*)
Crosswalk	Mapping of the elements, semantics, and syntax of one metadata schema to those of another. *(ISO/IEC TR 20943-5:2013, 3.1)*
Data migration	Process of transferring electronic information from one software/hardware environment or storage medium to another environment or storage medium with little or no alteration of structure and no alteration in content and context. *(ISO 5127:2017(en), 3.1.11.10)*
Database stanza (EZproxy)	A list of directives that EZproxy reads in the configuration file that combines a list of resources to determine whether or not the resource the user is trying to access is available to them. *(OCLC EZproxy Help: Introduction to database stanza directives)*
Digital Object Identifier (DOI)	A string used for the identification of an object of any material form (digital or physical) or an abstraction (such as a textual work) where there is a functional need to distinguish it from other objects. *(ISO 26324:2012)*
Domain Name System (DNS)	The internet's system for converting alphabetic names into numeric IP addresses. For example, the DNS converts the URL www.company.com into the IP address 204.0.8.51. *(PC Mag Encyclopedia)*
Data Type Definition (DTD)	Document that defines the structure and the legal elements and attributes of an XML document. *(w3schools.org)*
Redirect, dynamic and Redirect, static	Static redirects map one specific URL to another URL. Dynamic redirects use patterns to generate new URLs based on the structure of the old URLs. Implemented during a platform migration to ensure that users following links to the old platform are redirected to the new platform.
Electronic resource management system (ERMS)	A broad term for a collection of commercially available tools to help libraries manage their electronic resources. *(KBART Glossary of Relevant Terms)*
End user	The person or organization that uses a product or service. *(Cambridge Dictionary)*
EZproxy	EZproxy is a proxy server (intermediary) between end users and library licensed e-resources that authenticates end user identity and passes library-licensed content back to the end user. *(Adapted from OCLC EZproxy Help: About EZproxy.)*
IP (Internet Protocol) address	Every computer connected to the Internet is identified by a unique four-part string, known as its Internet Protocol (IP) address. An IP address consists of four numbers (each between 0 and 255) separated by periods (e.g., 0.0.0.0 to 255.255.255.255). *(w3resource.com)*

IP range	The set of IP (Internet Protocol) addresses assigned to an organization or individual, usually as a contiguous block (e.g., 132.170.0.0 – 132.170.255.255)
Knowledge base	A database that shows the resources a library can access electronically, or that it owns in print. *(KBART Glossary of Relevant Terms)*
Library solutions provider	Any entity that sells solutions or services to assist in library workflows related to discovery, authentication, access, usage, and general electronic resource management. They are also known as discovery vendors, knowledge base vendors, link resolver vendors, or library product vendors. In this context, entities such as EBSCO, ProQuest-Ex Libris, OCLC, Portico, CLOCKSS, and Springshare may be considered example library solutions providers.
Link resolver	A software tool that connects a description of an article (the source) with the full text of the article in question (the target). *(KBART Glossary of Relevant Terms)*
MARC (Machine-Readable Cataloging) record	MARC formats are standards for the representation and communication of bibliographic and related information in machine-readable form. A MARC record is a machine-readable cataloging record and consists of a leader, a directory, and variable fields. *(The Library of Congress, MARC Standards)* See also 0.
Metadata	Metadata is data about data. It is descriptive information about a particular data set, object, or resource, including how it is formatted, and when and by whom it was collected. It may be created automatically using software or entered by hand. *(American Library Association: Professional Resources A to Z Index of Topics)*
Metadata standards	A requirement which is intended to establish a common understanding of the meaning or semantics of the data, to ensure correct and proper use and interpretation of the data by its owners and users. *(Wikipedia)* See 0 for metadata standards relevant to this Recommended Practice.
Migration	Process of moving records, including their existing characteristics, from one hardware or software configuration to another without changing their format. *(ISO 13008:2012(en), 3.13)*
Normalization	Process of transforming a relation into one or more simpler relations free of attribute redundancies or inconsistencies in order to support referential integrity. *(ISO/IEC 20944-1:2013(en), 3.14.4.12)*
OpenAthens	A hosted service for the management of single sign-on access to SAML services. See https://www.openathens.net.

OpenURL	Syntax for transporting information about a target article from the source website to the link resolver. (*KBART Glossary of Relevant Terms*)
Permanent redirect (301)	A permanent redirect, or 301 status code, is used when any page has been permanently moved to another location. Users will now see the new URL as it has replaced the old page, and this will change the URL of the page when it shows in search engine results. Permanent redirects should be used to redirect users from the old platform URLs to the new ones. (*SEOClarity.net*)
Persistent link	Also called permalink or permanent link, a URL that is intended to remain unchanged for many years into the future, yielding a hyperlink that is less susceptible to error; a type of persistent identifier generated by a content management system for pages served by that system that are intended not to change. (*Wikipedia*)
Platform vendor	An organization that provides websites and tools for publishers to enable them to provide a platform for presenting their content to libraries and other users.
Publisher	Person or organization whose predominant activity is to commission, create, collect, validate, host, and distribute information in printed and/or in electronic form. (*ISO 9707:2008(en), 2.32*)
Repository	Organized and persistent data storage that allows data retrieval. (*ISO/IEC/IEEE 26511:2018(en), 3.1.24*)
SAML	Security Assertion Markup Language (SAML) is an open federation standard that allows an identity provider to authenticate users and pass identity and security information about them to a service provider. With SAML, a single sign-on experience can be enabled for users across many SAML-enabled applications and services. (*Amazon Web Services*) Athens, OpenAthens, and Shibboleth are SAML-based authentication services.
Shibboleth	Open source software package for web single sign-on across or within organizational boundaries. It allows sites to make informed authorization decisions for individual access to protected online resources in a privacy-preserving manner. See https://www.shibboleth.net/.
Static (web) page	A web page that is delivered to the user's web browser exactly as stored, in contrast to dynamic web pages, which are generated by a web application. Static web pages are often HTML documents stored as files in the file system. (*Wikipedia*)
Temporary redirect (302)	A temporary direct, or 302 status code, directs users and search engines to the desired page for a limited amount of time, until it is removed. (*SEOClarity.net*)

Section 2: Continuous Access: Linking to Content, Redirects, Resolvers, and Authentication

2.1 Summary

Continued access is at the core of the success of a content platform migration. Ensuring continued access during a migration requires effort from multiple players in the ecosystem, including publishers, library staff, content platform vendors, and other service vendors. Ideally, end users will experience a seamless transition, with minimal or no interruptions in access. Preventing access interruptions requires platform vendors and publishers to communicate the platform and URL changes to external services involved in linking to the content, such as library solutions providers, authentication services, digital preservation services, and Crossref, and, of course, to library staff. Beyond communication, platform vendors can implement one or more approaches to promote continuous access, such as redirecting old URLs to the new platform. Achieving seamless continuous access will require understanding the structure and complexity of the old and new links; how the links are affected by link resolvers and authentication services; and the prevalence, distribution, and nature of links to content on the older platform.

The publisher should consult with the new platform vendor about whether or not dual hosting of the platforms is advised. On the face of it, this seems like a good way to ensure that libraries can test entitlement access on the new platform while ensuring that patrons still have access through the old platform. But on the other hand, this often raises more issues and problems than it solves, especially with DOI registration and discovery service indexing. Consequently, a better option in most cases is to allow access to the new platform on a limited basis for select accounts, as a beta version.

2.2 Redirects

In order to handle the change in URLs while providing a seamless experience for users, the platform vendor implements redirects in consultation with the publisher. These redirects need to be in place at the time the new platform is launched in order for users to continue to access content. A redirect should accept all the URL types and structures in use by the older system. Ideally, the redirect will go to the specific content that the old URL landed on, rather than top-level pages or search forms. In cases where there isn't a clear one-to-one mapping for redirects, the new platform vendor needs to create a redirect that is as close as possible.

There are two fundamental types of redirects: static and dynamic. Static redirects map one specific page to another. Dynamic redirects use patterns to handle new URLs based on the structure of the old URLs. An example of a dynamic redirect would be a legacy article URL, such as https://scholarlypub.org/vol/issue/page, being parsed by the redirect logic on the new platform. The user would be redirected to the new URL, which could look something like https://scholarlypub.org/articleID1234. Redirection happens instantaneously and should be transparent to the user. The platform content vendor and the publisher will work together to determine the full set of redirects necessary to capture all traffic to old URLs and deliver users to the correct place on the new site.

While redirects solve the problem of users following old links, there is also the need to update links to content that have been distributed throughout the scholarly communications ecosystem. Links are distributed to many third parties, including:

- Search engines, such as Google, Google Scholar, and PubMed
- Discovery systems, such as EBSCO Discovery Service and Primo Discovery Service
- Library catalogs and database lists
- Digital preservation services (e.g., LOCKSS)

- Crossref and link resolvers
- Course pages
- Works cited and other bibliographies

Likewise, responsibility is shared among stakeholders for updating links after content migration. Platform vendors must create redirects that work throughout the ecosystem. The redirects need to function with user authentication systems and may need to be compatible with very old URLs that rely on some previous redirects. Library staff, library solutions providers, and other external vendors are responsible for the wholesale updating of links in their systems to the new URLs. Replacing the old URL reduces complications and avoids future link failure when the redirect is ultimately replaced or no longer functions.

2.3 Redirects for URL Changes and Persistent Links

When migrating from one hosting platform to another, the target URL will likely change for content pages, help pages, reporting dashboards, and the like. All URL changes require advance planning and communication. In the simplest case, the URL path changes, for example:

- https://scholarlypub.org/old-url migrates to https://scholarlypub.org/new-url

In other cases, the URL changes can be more complex. For example:

- https://journal1.scholarlypub.org/old-url migrates to https://scholarlylibrary.org/journal1/new-url
- https://journal2.scholarlypub.org/old-url migrates to https://scholarlylibrary.org/journal2/new-url

In the second set of examples above, the top-level domain, subdomain, and directory all change. It is important that traffic is migrated to the new platform. To a publisher, this traffic has a business value. The priorities for libraries and their patrons are ease of use and discoverability. For more examples, see Appendix E.

When possible, the host platform publisher or library solutions providers should provide guidance to library staff regarding the new URL. Suggestions for batch updating of existing URLs to the new URL format and specific examples are recommended.

Many platforms offer the ability to generate a persistent link to a specific item. The structure of persistent links tends to be more complicated than the top-level link to a platform and may rely on scripts and other technology beyond HTML. Persistent links should continue to work after migration. Things to consider:

- Persistent links can be relatively complicated and may pass through multiple domains
- Authentication services, such as EZproxy, OpenAthens, and Shibboleth, add additional linking complexities

2.4 DOIs and Crossref

Crossref maintains a database of digital object identifiers (DOIs) and associated metadata that provide a mapping between a unique fixed ID for scholarly content and the current location of that content on the web. This makes citation and location of scholarly content much more robust. It also means that managing the process of updating the Crossref database during a platform migration is critically important to the success of a migration. For content with DOIs assigned, simply creating redirects is not enough— the resolution URLs for DOIs will need to be updated as well.

During a migration, a list of DOIs, new metadata, and links is generated. Ahead of the new platform's launch, Crossref is notified that a change is coming on a specific date. The platform vendor, on the day of

launch, redeposits all of the DOIs, metadata, and URLs with the new platform information. This may be a good opportunity for the publisher to provide fuller metadata. Crossref has a Platform Migration guide (https://www.crossref.org/education/member-setup/working-with-a-service-provider/planning-a-platform-migration/) and checklist (https://www.crossref.org/education/member-setup/working-with-a-service-provider/checklist-for-platform-migration/).

When new scholarly content is published, it should be registered with Crossref and have a DOI created. For this to happen, the publisher must be a Crossref member and have been assigned a DOI prefix. DOI creation involves depositing the article metadata and URL with Crossref. This is usually done by sending a batch file in XML format, but members who aren't able to supply XML are able to use online forms to submit metadata manually. There's a list of the options for content registration on the Crossref site (https://www.crossref.org/education/member-setup/choose-content-registration-method/), and the Metadata Deposit Schema is described there as well (https://www.crossref.org/education/content-registration/crossrefs-metadata-deposit-schema/). See more information and tips in **Error! Reference source not found.**.

2.5 OpenURL and Link Resolvers

The OpenURL standard is designed to enable linking from information resources, such as abstracting and indexing databases (sources), to library-provided content (targets), such as articles in academic journals, whether online or in printed or other formats as recorded in catalog and index records. The linking is mediated by link resolvers, or link-servers, which parse the elements of incoming OpenURLs and provide links to relevant link targets, such as full-text content platforms.

The link resolver needs current URLs and syntax for linking to all content items on a platform. Platform vendors should communicate content and link changes directly to library solutions providers. Platform vendors will need to coordinate with library solutions providers and digital preservation services to ensure that the resolver provides working links at the migration go-live date. Library staff can test that the linking process resolves correctly once the new site is available for testing.

2.6 Authentication and Authorization Services and Systems

Access to content is controlled by the platform, and authentication can take a number of different forms, including:

- Username/password
- IP range(s)
- Proxy server
- Shibboleth/OpenAthens

The information driving these access control systems needs to be migrated to the new content platform and tested, ideally before the new site goes live, or as soon as possible thereafter to ensure continuity of access for library users. Each of these systems has its own special considerations that need to be taken into account.

With usernames and passwords (which are typically used for administrative access to the content platform or by individual subscribers or members), it is not generally possible to migrate the passwords from the old system to the new.

For institutions, the new platform needs to permit library staff to create accounts in the new system, and publishers need to communicate the particulars of this process to their institutional clients. For individual subscribers or members, the username (and potentially, the user profile) will be migrated, but a new

password will need to be created upon initial login by the user. These processes are subject to technical considerations if the publisher has a single sign-on system, and will need to be worked out by the publisher and platform vendor in that case.

IP ranges should be migrated from the old to the new platform, and ideally access can be tested as soon as the new platform is made available to library staff. If a proxy server is used, library staff will need to update the configuration of their server. The new content platform vendor should make these configuration details available, and the publisher should communicate this to all of their library staff users. For example, for EZproxy a default database stanza should be provided for the new platform and registered on the OCLC site.

Shibboleth and OpenAthens are examples of Security Assertion Markup Language (SAML)–based federated authentication services. Depending on the nature of the change to the content URLs, the platform vendor may need to provide new domain names and other details to the authentication service vendor. Testing authentication through these systems should be done as soon as the new platform is available.

2.7 Discovery Services, A&I Databases, and other Library Solutions Providers

It is important to communicate with all downstream partners about an impending migration and make sure they have the required information to update their databases. It may take up to 90 days for these library solutions providers to be able to update their systems, based on complexity, volume, and availability of support from the authentication service for platform migrations, so the earlier they can be notified, the better.

2.8 Recommendations for Responsibilities

2.8.1 Publisher Responsibilities

2.8.1.1 Create a website or at least a web page dedicated to platform migration

2.8.1.2 Post on library and other listservs about the migration process, including updates, changes, and delays, among other things

2.8.1.3 Share if the migration will be a hard cutover or dual platform overlap

2.8.1.4 Create a migration checklist of access action items, including EZproxy, Shibboleth, IP ranges, username/password, transition timeline, products that are changing, etc.

2.8.1.5 Develop a contingency plan, in case the schedule to provide access on the new platform doesn't go as planned (e.g., offer an option to open up the whole site temporarily)

2.8.1.6 Check that contact information for relevant library staff, digital preservation services, and library solutions providers is up to date and accurate

2.8.1.7 Communicate with digital preservation services and library solutions providers about the migration plan, to ensure they are prepared to update links appropriately

2.8.1.8 Provide a contingency plan, in case a discovery service isn't able to update the links in the expected timeframe

2.8.1.9 Work with linking services such as Crossref immediately post-launch to update all DOIs and URLs

2.8.1.10 Inform customers and digital preservation services when previous URLs will no longer be redirected

2.8.1.11 Ensure that the URL redirect system works with both OpenURL and major authentication systems

2.8.1.12 Maintain persistent links and redirects

2.8.1.13 Provide inventory of URLs at the domain and subdomain level that are to be migrated

2.8.1.14 Provide a list of key static pages that need redirection to or creation on the new platform (e.g., Help, About the Journal, etc.)

2.8.1.15 Determine who owns the registration of the domain-level URL, and who will be forwarding domain-level URL traffic on the day of launch

2.8.1.16 Have the TTL (time to live) setting on the DNS (domain name system) shortened before launch day

2.8.1.17 Turn on URL forwarding on launch day (DNS settings, assumed to be under the control of the publisher)

2.8.1.18 Provide documentation and notifications to library customers, including:

- URL crosswalk file

- Updated MARC records

- Use of DOI URLs, especially in MARC records

- Updated KBART records

- For journals, use the platform URL (especially in KBART files)

- DOIs are usually only issued at the article level for journals

2.8.1.19 DOIs and Crossref

- Assist in verification of deposit updates

- Communicate to customers that updates take two or more days to be fully reindexed by repositories

2.8.1.20 Authentication and authorization services and systems

- Document supported access methods

- Determine a core group of library staff for prelaunch access testing

- Communicate changes to access service providers (InCommon, OpenAthens)

- Determine if proxy- or SAML-based access integration will change

- Communicate changes to proxy and authentication service providers (WAM, OCLC, OpenAthens)

- Communicate changes to institutions and digital preservation services

2.8.2 Platform Vendor Responsibilities

2.8.2.1 Be aware of the impact of migrations on library staff and end users

2.8.2.2 Work with the publisher to make the transition for libraries and end users as smooth as possible

2.8.2.3 Coordinate with Google Scholar on launch-related activities, including a pre-launch site review by Google Scholar

2.8.2.4   Provide a "page not found" landing page that provides context and directs users appropriately in the case that a redirect does not resolve to the content

2.8.2.5   Persistent links and redirects

- Develop and implement permanent (301) redirects for legacy URLs, including both:
    - Dynamic URLs
    - Static URLs
- Maintain redirects for the entire duration of the hosting contract

2.8.2.6   DOIs and Crossref

- Notify PubMed, Crossref, etc. of pending launch date
- Redeposit or update pointers via deposit services on launch day

2.8.2.7   OpenURL and incoming links

- Support metadata-driven OpenURL-based links to content, in addition to DOI-driven linking
- Support authorization and authentication services and systems
- Document domain and host names that need to go through authentication services
    - Most relevant for proxies because SAML authorization is based on a token that persists
- Communicate changes to publishers
- Test all supported access methods prelaunch
- Do not use hard-coded URLs in scripts
- Provide default EZproxy database stanza

2.8.3 Library Staff Responsibilities

2.8.3.1   Test that access works through the authentication system

- Enable the new resource in OpenAthens or set up the new Shibboleth connection, if necessary
- Test the Athenized or Shibbolized URLs
- Test access through authentication service. Verify that all features correctly maintain authorized state (i.e., search, browse, etc.). Check authorization to top level, abstract/detailed views, and full content

2.8.3.2   Review instructions and information about updating URLs

- Be mindful of additional places within library systems that include URLs to be updated, such as an A-Z database list, LibGuides, or course pages

2.8.3.3   Work with publishers and library solutions providers to update discovery systems upon receiving migration notice from publishers. Identify direct impact to users and communicate the impact to users, if needed

2.8.3.4   Update authentication configurations, such as EZproxy, as needed

2.8.3.5   Test links as soon as they are available and verify links after launch

- Verify base links to platforms work
- Verify links to individual items work

- Test persistent links from previous platform(s)

- Test each link through authentication service

2.8.3.6   Review all platform migration communications in a timely manner

2.8.3.7   Ask questions of publishers if anything isn't clear

2.8.3.8   Ask discovery service provider when they will update links in their knowledge base products

2.8.4 Library Solutions Provider Responsibilities

2.8.4.1   Update links and other data in discovery services/knowledge bases as soon as the data is provided by the publisher

2.8.4.2   Create a contingency plan with publishers if links cannot be updated by migration launch date

Section 3: Content Migration

3.1 Summary

Content is at the heart of the migration process, residing at the very center of each stakeholder's priorities. Ensuring that content is fully migrated accurately and with all related assets is a significant sub-project of the migration that requires careful planning and attention. Virtually all platforms require an XML standard for content, and while most are based on the Journal Article Tag Suite (JATS) and the Book Interchange Tag Suite (BITS), there are preferences, nuances, and biases to these target specifications that always require a normalization process. Often, a migration project is a good time for publishers to clean up known issues.

3.2 Process

Going into a migration, a publisher should take stock of how much insight it has into its content set. This insight can vary widely from publisher to publisher, from those that have good documentation and a firm command of details to those knowing only the highest-level information. There are varied activities required depending on this self-assessment.

The most critical aspects of a content migration project are completeness and quality. Completeness is the ability to ensure all text, supplements, PDFs, images, tables, multimedia, and code have migrated, along with corrections, errata, or retraction notices. Quality means that the end user can consume the entire content package as originally conceived.

A publisher with complete knowledge of its content set can provide a detailed inventory report to the party that is normalizing its content to the new standard. This party can be outside the organization (an existing or new composition vendor, or perhaps the platform vendor) or inside the organization (for example, some publishers develop their own XML packages). Either way, the publisher needs to widely share important variances in its backfile. It is virtually guaranteed that publishers with longer histories will have more challenges to overcome in content normalization. Specifically, for the content-informed publisher, the following information is crucial:

1) Document Type Definitions (DTDs) by era

2) Content availability and file formats per time period, such as metadata only vs. full text in PDF, vs. full text in HTML and PDF

3) A good "typical" content set by content type

4) A "shop of horrors" by content type; i.e., content assets that are nonstandard or known to be outliers

5) An inventory of DOIs, article count, asset count, supplement count, etc.

Lacking this information at the start will mean these data points will need to be discovered during the content normalization process, which can result in needing to adapt and adjust to new information, often with cost and timeline impacts.

Publishers that have relatively little insight into the state of their content, most commonly small- to mid-sized organizations, can undertake activities that will help provide a smooth migration.

The first and foremost strategy for the publisher without thorough content information is to start the content project early and ensure there is adequate time to stay ahead of the migration project. The publisher can do this itself or, more likely, in conjunction with its digitization partner. Starting the process by putting together a comprehensive content inventory document is the best way to ensure that the full complexity of the content migration process is understood. Migrations require sample content for testing

ingestion, business rules, display, access, search, and many other purposes. Without a good, clean, normalized sample of content, it will be difficult to ascertain whether the application is working as expected. It's important for the content project to be a bit ahead of the actual platform migration. The publisher can start the process early by requesting a copy of the backfile from its current platform or composition vendor, which can take many weeks in some cases. Note that the publisher should not start the XML normalization process until after selecting a platform—the variances in vendor specifications will almost always require redoing this work if started ahead of time.

Second, publishers that do not have a complete understanding of their archive content will need to have a cushion, in terms of time and budget, to deal with information that emerges mid-process. Often, entire eras of content have been "made to work" via multiple front-end website hacks, which do not migrate well and need to be standardized as part of the project. The content will be more valuable and portable after this work is complete, but it does need to get done during a migration.

Finally, all publishers need to plan on a period of side-by-side operation for content production, in which new content must be loaded into both the current and the new platform, after the initial backfile migration and prior to the launch of the new platform. This is generally the duration of the migration project itself, and can be 6–12 months of content that must be created in both the legacy format as well as normalized to the new platform format.

Since the content is going to have to be repackaged and normalized for the new platform, this is often a good time to clean up the metadata to the extent it is possible. The publisher should work with the new platform vendor and its digitization partner to decide how much, if anything, is possible to do in the context of the migration project.

Although not strictly a content issue, publishers should be aware of special features of the old platform and/or special features they are planning for the new platform and whether those features are driven by aspects of the content or metadata. The new platform vendor needs to be aware of these and to have assessed and agreed with the publisher that these features can be enabled based on the content and metadata received.

3.3 Recommendations for Responsibilities

3.3.1 Publisher Responsibilities

3.3.1.1   Be aware of how much is known or unknown about the backfile

- Article, chapter, page counts
- Supplemental data
- Multimedia
- Full-text XML vs. PDF, and metadata counts
- DTDs used and during which timeframes
- Provide inventory of content (or confirm inventory generated by conversion partner)

3.3.1.2   Start the investigation as early as possible

3.3.1.3   Keep the content project ahead of the main migration project

3.3.1.4   Provide a good representative sample from the detailed inventory described in 3.2, above.

- All content types
- A variety of typical content

- Examples of content outliers

3.3.1.5 Deliver a full set of content to the platform. Test and verify the delivery

3.3.1.6 Verify full content set has been migrated to the new platform and displays as expected

3.3.2 Platform Vendor Responsibilities

3.3.2.1 Provide detailed content XML specifications to the party performing the content normalization

3.3.2.2 Provide support for issues/questions that arise during the migration

3.3.2.3 Coordinate with the migration team so the content project does not impede the overall migration process

3.3.2.4 Provide a database query of content counts or DOIs to reconcile with inventory

3.3.2.5 Previous platform vendor: Package and provide the content and metadata to the new platform vendor, with documentation that describes how the content is organized in the delivery package

3.3.3 Library Staff Responsibilities

3.3.3.1 Spot-check to ensure content has been migrated

3.3.3.2 Communicate with publishers to resolve issues reported

3.3.3.3 Compare title counts from pre- and post-migration

Section 4: Content Metadata Migration

4.1 Summary

In addition to the content itself, metadata about the content must also be migrated. That metadata can be provided in many forms, including a KBART file, a MARC record file, or a spreadsheet. Some files include basic information about the content being migrated, such as title, publisher, format, and date, while others are much more detailed. For information about additional metadata standards to consider during a migration, see 0.

4.2 Process

There are many available metadata standards being used in content delivery that are enabled for content ingestion and are able to be validated on any given system. Technology obstacles and a learning curve or training issues must be considered when switching to or adding a new standard to be processed. One is not clearly better than another, and several are more narrowly focused for a specific type of content. Three standards and two identifiers are discussed here, as they are commonly considered during a platform migration.

4.3 KBART

Knowledge Bases and Related Tools, or KBART, is a NISO Recommended Practice (https://www.niso.org/publications/rp-9-2014-kbart). Very simply, KBART recommends best practices for the communication of electronic resource title list data and coverage data for both serials and monographs from content providers to knowledge base (KB) providers.

Knowledge bases provide metadata to support various library discovery services, including OpenURL link resolvers, library catalogs, electronic resource management systems, and other tools. During content platform migration, electronic resource URLs often change, and sometimes the content structure changes. These changes should be updated promptly in knowledge bases and other systems to ensure accurate linking to the affected electronic resources with minimal interruption to library patrons. KBART standardized file formats and fields enable consistent, efficient delivery of content data to library solutions providers.

4.4 MARC

In the context of platform migrations, only URLs (or the 856 field in MARC 21) are affected in MARC records. Publishers will often create URL redirects for a period of time, in order to prevent disruption in access. However, these redirects do not always remain in place in perpetuity. Redirects also face increased risk of breaking down when proxy servers and link resolvers are appended to the URL syntax. It is critical that publishers work with library solutions providers and library staff to ensure the current URL is in place for record linking.

The most effective way to communicate URL updates to library solutions providers and libraries is for publishers to complete these steps:

1) Inform all MARC record providers of URL changes and follow up to confirm they have updated their records

2) Inform libraries that updated MARC records have the new URLs and note whether all URLs have been updated or whether they are updated starting with a certain point in time (e.g., all URLs

from 2019 and earlier have the old URL structure, while all URLs from 2020 onward have the new URL structure)

3) Emphasize that there will be a URL change in public migration announcements

4) Make redirect policy clear, stating how long the old links will be redirected

5) Create and share URL crosswalk documentation (including high-level syntaxes) for entire content portfolio

6) Provide KBART files with the new URLs

7) Libraries should commit to updating URLs to avoid accumulating old, out-of-date URLs in their catalog, especially if redirects will only be available for a specified time period

4.5 Transfer Code of Practice

The Transfer Code of Practice is a NISO Recommended Practice (https://www.niso.org/publications/rp-24-2019-transfer). The Transfer Code of Practice responds to the expressed needs of the scholarly journal community for consistent guidelines to help publishers ensure that journal content remains easily accessible by library staff and readers when there is a transfer between parties, and to ensure that the transfer process occurs with minimum disruption. The Code contains best-practice guidelines for both the transferring publisher and the receiving publisher. Publishers are asked to endorse the Code, and to abide by its principles, wherever it is commercially reasonable to do so.

In support of the Code, an online notification service was launched where publishers register information about transfers as soon as a contract is signed. Libraries and other interested parties sign up for email alerts to learn of title transfers. Following the move to NISO—and in tandem with efforts to ensure coordinated updates to records during transfers—the Transfer Alerting Service was transitioned to hosting through the ISSN International Centre and updated with additional reporting functionality and connectivity with ISSN records.

It is important to understand the difference between the transfer of a journal from one publisher to another and the migration of journal content from one platform to another. The former is related to who owns the copyright and manages the creation and management of the content for a single journal or set of journals. The latter is related to access to the content by library staff and others, and the move from one point of access to another. During a content platform migration, it is important to ensure that the correct publisher data is migrated with the content. Coordination between transferred journals and a wider content migration is therefore imperative.

4.6 Identifier Information

4.6.1 General Information

Identifier information is crucial for many segments of the supply chain, ensuring access to the correct copy of the material. Library systems, discovery services, linking algorithms, and more depend upon good identifiers to enable accurate search results for patrons. (Please note DOIs and Crossref are covered in Section 3:.)

4.6.2 ISSN

For journals and continuing resources, it is important that publishers migrate not only the current ISSN but the title histories as well. The previous ISSNs and titles should be searchable, and display when relevant. URLs for current and historic titles should redirect to the new platform. NISO's Recommended Practice for the Presentation and Identification of E-Journals (PIE-J) (https://www.niso.org/publications/rp-16-2013-pie-j) provides an excellent resource for publishers, with

information, examples, and a short brochure regarding maintaining citations, previous titles of a periodical, managing different formats, and identifying all versions of the ISSN when redesigning a website or acquiring content from another publisher. ISSNs can be verified at the ISSN International Centre website (https://www.issn.org/), and if journals and other relevant materials do not have ISSNs, prior to a migration would be a good opportunity to apply for ISSN from the local ISSN Center. In the United States, the ISSN Center is part of the Library of Congress (https://www.loc.gov/issn/).

4.6.3 ISBN

When migrating a platform that includes e-books, it is important to ensure that all relevant ISBNs are transferred and are properly linked to the appropriate publisher, distributor, edition, and format of the title. Reviewing and confirming the accuracy of ISBNs, both 10-digit and 13-digit, is recommended whenever possible. Including the 13-digit ISBN is especially important now that there is a second set of prefixes (979) for new ISBNs.

4.7 Recommendations for Responsibilities

4.7.1 General Information

Consideration of a detailed list of standards during a platform migration will enable all parties to discuss metadata improvements that might accompany the migration. Identification of the types of content and metadata involved in the migration, and knowledge of the available metadata standards, will increase the likelihood of making an informed decision.

Early-stage analysis is recommended to identify gaps or nonconforming structures, the volume of content, and the depth of the mappable elements. This will allow stakeholders to determine cleanup activities and delegate work where appropriate. It will also have relevance for ongoing and post-migration cleanup. During migration of content, testing on a small set of records is recommended before proceeding with the full migration, especially if new standards are being implemented.

Vendor contacts, metadata staff in the library, and project managers all play a role in identifying and delegating work to analyze, map, and clean data where applicable.

4.7.2 Publisher Responsibilities

4.7.2.1 Complete content analysis and review of standards

4.7.2.2 Map existing data structure to new structure/platform (whether or not a new standard is chosen)

4.7.2.3 Clean up data and ensure there are published versions of all data, including XML and non-text

4.7.2.4 Test content migration with platform vendor and a number of library staff

4.7.2.5 Provide a specific contact email for library solutions providers to use

4.7.2.6 Communicate the platform changes to library solutions providers ahead of time and involve them early in the process

4.7.2.7 Perform thorough testing on different scenarios before the migration

4.7.2.8 Schedule regular meetings with publishers, content platform vendors, and library solutions providers, especially for complex migrations

4.7.2.9 Use mailing lists as well as direct contacts to communicate changes to the impacted community

4.7.2.10 Provide pre- and post-migration KBART for library staff, preferably customer-specific KBART so subscribers can verify that all their content and entitlements have migrated

4.7.2.11   If the content is hosted on dual platforms (the old and the new platforms), maintain the KBART holdings and linking to both platforms

4.7.2.12   Provide a crosswalk between the old and new URL syntax (KBART)

4.7.2.13   Ensure a feedback mechanism for content deliveries to library solutions providers upon receipt and upon completion of updates

4.7.2.14   Ensure that content as well as supplemental data survives a platform migration (Transfer)

4.7.2.15   Determine whether any journal-specific apps, audiovisual content, or data archives will be migrated (Transfer)

4.7.2.16   Communicate with relevant parties/customers regarding when a platform migration is expected to happen (Transfer)

4.7.2.17   If a publisher/vendor uses an e-alert system on their current platform that allows customers to create an account on their site and/or receive e-alerts, ensure that a similar service is available on the new platform, that accounts are migrated, and that registrants are informed of the change (Transfer)

4.7.2.18   Create/consult a list of all licensing outlets for the migrating content (for example, content aggregators) in order to streamline communication about the platform migration (Transfer)

4.7.2.19   Ensure that periodical histories for titles, formats, and ISSN are retained when content is migrated (PIE-J)

4.7.3   Platform Vendor Responsibilities

4.7.3.1   Complete content analysis and review of standards

4.7.3.2   Map existing data structure to new structure/platform

4.7.3.3   Test content migration with publisher and a number of library staff

4.7.3.4   Provide a specific contact email for library solutions providers to use

4.7.3.5   Schedule regular meetings with publishers, content platform vendors, and library solutions providers, especially for complex migrations

4.7.3.6   Use mailing lists as well as direct contacts to communicate metadata and content changes to the impacted community

4.7.3.7   Ensure a feedback mechanism for content deliveries to library solutions providers upon receipt and upon completion of updates

4.7.4   Library Staff Responsibilities

4.7.4.1   Participate in content analysis and review of standards, especially regarding other library systems with which the content platform will interact

4.7.4.2   Review the Data Migration Test outcomes and communicate results

4.7.4.3   Update URLs in MARC records for titles owned/subscribed to by local institutions

4.7.5   Library Solutions Provider Responsibilities

4.7.5.1   Ensure contact information is easy to find for library staff, publishers, and platform vendors

4.7.5.2   Provide status updates to publishers and content platform vendors (KBART)

4.7.5.3   Library solutions providers should update their automated scripts to pick up URL changes and work the changes into their update schedules

4.7.5.4 Schedule regular meetings with publishers, content platform vendors, and library solutions providers, especially for complex migrations

4.7.5.5 Use mailing lists as well as direct contacts to communicate metadata and content changes to the impacted community

4.7.5.6 Provide pre- and post-migration KBART for library staff, preferably customer-specific KBART, so subscribers can verify that all their content and entitlements have migrated

Section 5: User and Administration Accounts

5.1 Summary

During a migration, library staff and end user accounts need to be transferred from the previous platform, or recreated in such a way that the users and administrators retain access to key features and functionality associated with the accounts.

5.2 Library Staff Administrator Accounts

Many content platforms offer a suite of functions for library staff as account administrators. Functions could include the ability to gather usage reports; access content entitlements, KBART, and MARC files; view and modify authorized IP address ranges or other authentication information; add or modify OpenURL and external linking; add library logos and branding; customize interface options; view invoices, licenses, and accounting statements; access training; and contact customer support. Library staff consider such functionality to be key to efficient management of electronic resources, so uninterrupted access to administrator accounts is important. In a new platform, there may be new workflows and dashboards to become familiar with in order to perform these functions.

5.3 End User Accounts

End user accounts provide a variety of features, such as persistent folders with saved items, citations, and notes; interface preferences; storage of email addresses and other personal information provided by the user; connections to related accounts; and progress trackers. If possible, end user accounts, the contents of their folders and the folder structure, and other personalizations should migrate to the new platform. Library staff and end users need to know how the migration will affect user interactions with and access to the content, especially if there is the potential for loss of saved lists or content.

5.4 Recommendations for Responsibilities

5.4.1 Library Staff and Admin Accounts

5.4.1.1 Publisher Responsibilities

5.4.1.1.1 Specify how to connect to the library staff administration site and provide a way to create or verify necessary credentials. If possible, supply a URL that connects directly to the administration site

5.4.1.1.2 Indicate whether new credentials are required or if the previous credentials will continue to work, and how long the previous administration site will be available

5.4.1.1.3 Communicate how new passwords can be created

5.4.1.1.4 Describe new functionality that will be available to the library staff and provide demonstrations and training materials

5.4.1.1.5 Identify administrative functionality on the current platform that will not be available on the new platform

5.4.1.1.6 Indicate whether historic usage data must be downloaded by a certain time

5.4.1.2 Platform Vendor Responsibilities

5.4.1.2.1 Transfer institutional administrative accounts to the new platform, along with other individual login information. This information is typically provided by the previous platform vendor. The

new and previous platform vendors need to coordinate to ensure that the information is provided in a timely manner and in a format that the new platform vendor is able to ingest into its system

5.4.1.2.2 Provide a mechanism for library staff to update their passwords if these are not being transferred from the old system

5.4.1.2.3 Provide publishers with information and training on the new administrative functionality for library staff

5.4.1.3 Library Staff Responsibilities

5.4.1.3.1 Ensure account settings and information migrate correctly and update as needed

5.4.1.3.2 Set up new passwords for accounts, if passwords have not been transferred

5.4.1.3.3 Communicate any lost administrative functionality to publisher

5.4.1.3.4 For libraries who use electronic resource management systems (ERMS), update administration changes in ERMS

5.4.1.3.5 Download all desired usage data

5.4.2 End User Accounts

5.4.2.1 Publisher Responsibilities

5.4.2.1.1 Organize end user contact information and share it with library staff administrator contacts so they can help users through the account changes

5.4.2.1.2 Determine which end user data and functionality will carry over from the old system to the new

5.4.2.1.3 Communicate to the end users how to update their passwords, if necessary, and what data has been carried over from the old platform and what has not

5.4.2.1.4 Ensure that any data transferred to other parties is done so in accordance with applicable data privacy and protection laws and regulations

5.4.2.2 Platform Vendor Responsibilities

5.4.2.2.1 Communicate to the publisher exactly what end user data is being carried over from the old system to the new

5.4.2.2.2 Assist publishers with developing a plan for communicating with library staff about end user data

5.4.2.2.3 Assist publishers with developing a plan for communicating with end users about their data and about updating their passwords, if necessary

5.4.2.2.4 Ensure that any data transferred to other parties is done so in accordance with any applicable data privacy and protection laws and regulations

5.4.2.3 Library Staff Responsibilities

5.4.2.3.1 Communicate to their users what end user data is being carried over from the old platform to the new one

5.4.2.3.2 Resolve issues reported by end users, based on the information they receive from publishers and library solutions providers

Section 6: Usage Statistics

6.1 Summary

Usage data is essential to library staff and publishers for a variety of assessments, especially renewal and purchase decisions. Major content platforms commonly provide usage data based on the COUNTER (https://www.projectcounter.org/) Code of Practice, and many provide additional data, analytics, and dashboards suitable to their particular content, business model, and interface functionality.

Library staff and publishers are interested in continued access to usage data during and after a platform migration.

Library solutions providers and publishers need to consider how to provide continued access to usage data from the previous platform and whether to transfer the data to the new platform. Library staff and publishers need access to a minimum of two years of data prior to the migration date from the previous platform and clear instructions on where and how to access the data. Publishers and library staff need to know the plans related to ongoing hosting of usage data, timing for removing access to the data on the previous platform, and information on how to access the COUNTER reports for the new platform.

If the new platform offers additional reports and analytics, library staff and publishers need training and explanations of the data, how it is gathered, and how to interpret it.

6.2 COUNTER Usage Data

COUNTER (https://www.projectcounter.org/) provides a Code of Practice to ensure that their library customers receive reliable and consistent usage data. Widespread use of COUNTER by library solutions providers ensures that different platforms and publishers record and report interactions with the platform and content in the same way. The COUNTER Code of Practice enables libraries and publishers to compare usage data generated on different platforms, in different years, or by different libraries. Because of this consistency, COUNTER reports are widely used for important assessments such as cost per use analysis and reporting of statistics to the Association of Research Libraries (ARL).

COUNTER compliance is checked annually via an independent audit. Library solutions providers can test the compliance of the reports generated by the new platform by using the Validation Tool. More information about the COUNTER Code of Practice Revision 5 (https://www.projectcounter.org/code-of-practice-five-sections/abstract/) and the Validation Tool is available from the COUNTER website (https://www.projectcounter.org/).

6.3 Usage Dashboards and Request Forms

Platforms that offer COUNTER and other usage data typically have online forms and dashboards for requesting and viewing usage reports. Library staff need instructions on how to access the usage system and training on any non-COUNTER data and features. The COUNTER Code of Practice prescribes specific functionality and features for their forms, but there is a lot of leeway as to how a form looks and the particulars of how it functions. Platform redesigns are a good opportunity to consider the design of the report request system.

ANSI/NISO Z39.93, *Standardized Usage Statistics Harvesting Initiative (SUSHI) Protocol* (https://www.niso.org/publications/z3993-2014-sushi) provides an API to retrieve COUNTER usage data. SUSHI enables the automated transfer of COUNTER usage reports to local systems, making the COUNTER report-gathering process faster and more consistent for library staff and library consortium administrators. If the platform supports SUSHI, it should provide instructions for library staff on how to

format a SUSHI request. More information about SUSHI is available from NISO and COUNTER (https://www.projectcounter.org/code-of-practice-sections/sushi/).

6.4 Non-COUNTER Usage Data

Non-COUNTER and other usage data may be gathered by a platform vendor and shared with customers in reports, dashboards, and visualizations. This data may vary in its importance to libraries, depending on its content and purpose. Usage that is relevant to purchases and business practices, such as Demand-Driven Acquisition (DDA) and Evidence-Based Acquisition (EBA) usage, needs to remain accessible to libraries and publishers after a migration. The new platform needs to generate and provide access to data, so usage-based business transactions can be reviewed and verified.

6.5 Recommendations for Responsibilities

6.5.1 Publisher Responsibilities

6.5.1.1   At baseline, create a website dedicated to platform migration

- Host the migration page for at least two years after migration so library staff can review it as needed to find information related to gathering historic statistics, locating content, etc.

- Review and update contact information before sending out information

- Provide the access URL and login information needed to access statistics for the new platform

- Specify where and how to access legacy statistics, and inform library staff about how long they will be available and any changes to the URL and logins for accessing them

6.5.1.2   Publishers and content platform vendors should advise libraries, at least three months in advance, to download all desired usage data prior to the migration

- Specify dates of usage that will be included on the old versus the new platform

- Specify if usage data from the previous platform will be available. Send multiple reminders

6.5.1.3   Consider adding language to its contract with the new platform vendor about what happens to usage data upon termination of agreement (ideally, the previous vendor will continue to host usage statistics for a predetermined amount of time so library staff can gather reports for all usage on the old platform)

6.5.1.4   Test COUNTER compliance of the new platform within three months of migration using the COUNTER Validation Tool. Schedule an audit with NISO

6.5.1.5   Share new SUSHI connection information with library staff, as well as instruction on how to pull usage statistics on the new system, at least two months in advance of migration

6.5.1.6   Inform institutions when usage data will be available for retrieval on the new platform and when data started to be collected

6.5.2 Platform Vendor Responsibilities

6.5.2.1   The previous platform vendor should provide the Publisher with a full, downloaded report of usage data for each account, at minimum going back two years, to make available upon request at the time of transition

6.5.2.2   Contact statistics service vendors (such as Springshare or ScholarlyIQ; see more information in Appendix D) to inform them of the transition

6.5.2.3   Audit and test the usage data reports within three months after the migration

6.5.2.4   For changes to non-COUNTER reports, explain the suite of non-COUNTER reports on the new platform

6.5.3 Library Staff Responsibilities

6.5.3.1   Download usage reports from the old platform in advance of the migration

6.5.3.2   Note if there is a period of time during the transition when the content is freely available, as this can affect the usage data

6.5.3.3   Gather usage statistics on the new platform, taking note of credentials, including SUSHI URL; alert publisher if there are any issues

Section 7: Communication

7.1 Summary

Communications between migrating parties (publishers and platform vendors) and affected stakeholders (library solutions providers and libraries) are of critical importance. Stakeholders often need to make appropriate updates to internal systems, which take time to understand, arrange, and implement locally. While there are often internal dependencies that impact the information available for communication, migrating parties should make best efforts to communicate to stakeholders early and often.

7.2 Process

Stakeholders may engage in different modes of communications, including but not limited to emails, live meetings, webinars, mailing lists, social media posts, and conference presentations. Publishers and content platform vendors need to be working together regularly to develop communication plans on how to best make external stakeholders (libraries and library solutions providers) aware of the changes that require action.

7.3 Resources

While internal resources will vary at each organization, migrating parties (namely publishers) should make their best effort to create and maintain the following resources:

1) Migration hub: the creation of a website or page dedicated to serve as a hub for resources listed below and for migration updates

2) Checklist: a succinct list of required actions by stakeholders

3) FAQ document containing general and more technical information about the migration

4) Marketing collateral for library end users, on the features and functionality of the new platform, which libraries can share internally

5) Webinars and/or tutorials: live or recorded demonstrations regarding new features, functionality, and appearance of the platform

6) Support: a dedicated contact (preferably an email address) that can answer migration queries

7.4 Recommendations for Responsibilities

7.4.1 General Information

This section provides recommendations on which actions specific stakeholders need to take, in order to communicate about the migration and its effects properly.

7.4.2 Publisher Responsibilities

7.4.2.1 Create an internal communications team to inform internal and external stakeholders of impending changes and updates

7.4.2.2 Consult with or create a library advisory board, which can help define the necessary migration messaging and the information it should contain

7.4.2.3 Review contact information in advance of sending out migration communications

7.4.2.4 Identify external stakeholders and acquire their contact information

7.4.2.5 Provide an opportunity for stakeholders to share their contact information for future messages (contact information may be out of date on the publisher side)

7.4.2.6 Communicate to external stakeholders no less than two months in advance of planned migration date (six months is ideal, especially for library solutions providers)

7.4.2.7 Create or utilize existing communication channels, including but not limited to:

- Email awareness campaigns of four messages:
    - Introduction to migration (at least two months in advance)
    - Linking to web page/migration hub (one month prior)
    - Migration reminder (one week prior)
    - Post-migration check-in (one week after)
- Industry mailing list posts
- Social media posts
- Conference presentations

7.4.2.8 Create a publisher website dedicated to the migration. Update the website as the migration progresses

7.4.2.9 Create a checklist for library staff that thoroughly covers library solutions provider's plans and staff actions needed for access. Examples:
Wiley:
https://onlinelibrary.wiley.com/pb-assets/Lib%20Marketing/WOL%20Guides/WOL_Migration_Checklist-1630003830.pdf
Duke University Press:
https://www.dukeupress.edu/getmedia/9545bee2-c636-4be6-be9c-e569b64ed8ae/Platform_Migration_Checklist

7.4.2.10 Communicate early on with library solutions providers about the critical changes they will need to implement, such as linking syntax, mentioned above

7.4.3 Platform Vendor Responsibilities

7.4.3.1 Consult with and provide a sample communication plan for the publisher

7.4.3.2 Review publisher's communication plan and provide feedback

7.4.3.3 Provide documentation of new platform to publishers for local adaptation

7.4.3.4 Remain available for publisher inquiries on platform functionality

7.4.3.5 Respond to queries in response to action items on the communications plan

7.4.4 Library Staff Responsibilities

7.4.4.1 Share migration information, such as date of platform change, downtime planned, changing URLs, new or lost functionality, changes to end user accounts, and instructions for public services and end users

7.4.4.2 Share training links and webinar dates

7.4.4.3 Share announcements about new features and content

7.4.4.4 Communicate with IT colleagues and other parties who support access to the platform

7.4.4.5 Contact knowledge base providers to ensure that they update holdings, URLs, and linking parameters

7.4.4.6 If there is a consortium relationship, forward all communications from the vendor and publisher to member libraries and coordinate which actions will be taken by the consortium and which by the member libraries

7.4.5 Library Solutions Provider Responsibilities

7.4.5.1 Check in with publishers to coordinate metadata updates

7.4.5.2 Communicate platform changes to libraries to ensure a seamless process

Appendix A
Metadata Standards

Consideration of metadata standards is recommended when migrating content. These are some of the metadata standards being used by publishers and providers to deliver content, for content ingestion, and to validate content on any given system.

A.1 JATS

http://www.niso.org/publications/z3996-2021-jats

Journal Article Tag Suite: an ANSI/NISO standard of elements and attributes in XML format describing journal article metadata. Other content types also mentioned include letters, editorials, book reviews, and product reviews. Offers three journal article tag sets relevant to different needs. It can be used as a way to exchange journal content with flexibility. The three tag sets include:

1) Journal Archive and Interchange Tag Set

2) Journal Publishing Tag Set

3) Article Authoring Tag Set

Any of the tag sets may be extended or restricted to meet the needs of a given project. A new tag set that is a subset of any of the three would be considered "conforming" to the standard and valid. Added elements/attributes, though, should be considered as "based on JATS." JATS was created to standardize and streamline the exchange of journal content with flexibility. Further refinements of version 1.2 include four new attributes to support general and controlled taxonomies/vocabularies, tracking elements to adjust as online journal publishing matures, and automated indices. A metadata standard.

A.2 BITS

https://jats.nlm.nih.gov/extensions/bits/tag-library/2.0/chapter/how-to-read.html

Based on JATS, Book Interchange Tag Suite is a standard of elements and attributes in XML format to allow the exchange of book content between publishers and archives, whether an entire book or part of a book, such as a chapter. This model only supports scholarly, reference, higher education, medical, and technical books. A goal of BITS was to create a model that would enable the construction of books comprising articles. This allows article bodies to pass nearly unchanged into book parts, with changes only applied to the outer wrapping element and certain book-specific metadata that reflects the move from an issue of a journal to a chapter of a book. This interchangeable model is supported by the tags constructed using the models in JATS, and explicitly defines the relationship between BITS and JATS and when to apply each model. A metadata standard.

A.3 EAD

https://www.loc.gov/ead/EAD3taglib/EAD3.html

Encoded Archival Description is a standard of elements and attributes in XML format for archival finding aids. It supports the general structure of finding aids online as used by archivists and comprises three primary sets of information:

1) Administrative: repository details, acquisition, access/usage restrictions, etc.

2) Descriptive: biographical/historical notes, about creator, scope, control access

3) Folder List: materials that make up collection by box, folder, item, or other designation

It is intended to preserve hierarchical relationships between levels of description and inheritances of information from one level to another. EAD was developed as a community standard to digitally encode archive descriptions that can be adapted through changes in hardware and software technologies. By employing machine-readable forms and a standard of descriptions, archivists and researchers can readily identify and comprehend the essential components of archival content. This uniformity allows for the exchange of archival content between systems to keep up with changes in technologies. A metadata standard.

A.4 Dublin Core

http://www.dublincore.org/specifications/dublin-core/

The Dublin Core Metadata Element Set is a standard of fifteen metadata elements for use in resource description. This standard is part of a larger set of metadata vocabularies and technical specifications maintained by the Dublin Core Metadata Initiative (DCMI). The full set of metadata vocabularies includes sets of resource classes, vocabulary encoding schemes, and syntax encoding schemes. The Dublin Core Metadata element set can be used by experts, including resource description specialists, and nonexperts to describe the core elements of physical and digital items. Focusing on the fifteen elements creates a more straightforward schema to implement but may also be limiting. However, it is an extensible standard through the use of qualifiers and has benefited from international participation through DCMI. A metadata standard.

A.5 PBCore

https://pbcore.org/xsd

Public Broadcasting Metadata Dictionary is a standard of elements and attributes designed to describe media, both digital and analog, and was built on the foundation of Dublin Core as an international standard. PBCore is made up of 15 containers and 82 elements, with 49 attributes in XML format. In order to validate, elements must be included in the correct order according to the built hierarchy. PBCore was created by and for the public broadcasting community to describe, share, and manage media, including local radio and television programs. PBCore's use has expanded, with moving image archives and media organizations outside of public broadcasting adopting the standard to catalog and describe audiovisual assets and collections. It includes an exchangeable mechanism for moving content between applications, and a data model for configuring into various collection management systems. A metadata standard.

A.6 VRA Core

https://www.loc.gov/standards/vracore/schemas.html

Visual Resources Association Metadata Core is a data standard for the description of works of visual culture as well as the images that document them. Works of visual culture can include objects or events such as paintings, drawings, sculptures, architecture, and photographs, as well as book, decorative, and performance art. It is an internationally recognized metadata standard that is used both as a standalone format and as an approved extension schema to METS for objects that contain cultural heritage resources. VRA Core is the standard for describing cultural heritage objects, and is widely used by art and architecture schools, libraries, museums, archives, and other organizations maintaining visual resource collections. The three primary entities in VRA Core are collection, work, and image; the latter supports a relational data structure for documentary images of single or multiple works. The model allows for the transformation of data within a relational structure, and includes requirements on the elements, sub-elements, and attributes to maintain such a structure. A metadata standard.

A.7 METS

http://www.loc.gov/standards/mets/mets-schemadocs.html

Metadata Encoding and Transmission Standard is a schema for encoding descriptive, administrative, and structural metadata regarding objects within a digital library in XML format. It also represents data about preservation and rights. METS uses a hierarchical structure to relate digital library objects to the names and locations of the files comprising the objects and the associated metadata. METS is an open, nonproprietary standard. It was developed by the library community to be relatively simple to implement, with extensible and modular features. METS uses the XML schema for namespaces and works well with MODS and Dublin Core for descriptive schemas and PREMIS for preservation-related schemas.

A.8 MODS

http://www.loc.gov/standards/mods/mods-schemas.html

MODS is the Metadata Object Description Schema. It is a descriptive XML metadata standard from the Library of Congress Network Development and MARC Standards Office. It was originally designed for library applications but may have other uses, and is a simpler derivative of MARC, but more complex than Dublin Core. MODS is an extension schema for METS, represents metadata for OAI (Open Archives Initiative) harvesting, and has a hierarchy that allows for rich description of complex digital objects. MODS is used by the Library of Congress for digital library projects, archived websites, and OAI collections. It uses language-based tags and similar definitions to MARC elements, is particularly applicable to digital resources, and as an XML schema allows for flexibility and use of freely available tools. A metadata standard.

A.9 MADS

http://www.loc.gov/standards/mads/mads-2-1.xsd

MADS is the Metadata Authority Description Standard. It is a MARC 21–compatible XML format for data presented in the MARC 21 Authority format. It includes one or more of three main elements: authority, related, and variant; and each main element contains one or more of eight descriptor elements: name, titleInfo, topic, temporal, genre, geographic, hierarchicalGeographic, and occupation. MADS was created to support an XML schema for authority data. There is documentation available for those designing and implementing LIS and related technology systems. It works well with RDF (Resource Description Framework) for information modeling. A metadata standard.

A.10 PREMIS

https://www.loc.gov/standards/premis/schemas.html

PREMIS is a data dictionary for metadata to support the long-term preservation of digital objects, including metadata about provenance, authenticity, preservation activity, technical environment, and rights management. It is implementation-neutral, focusing on data that is needed rather than how to record that data. PREMIS is hosted at the Library of Congress and includes an Implementers' Group and Editorial Committee. PREMIS includes metadata or semantic units pertaining to objects (technical metadata), events (provenance and preservation activity), and rights (terms and conditions). If the content platform migration includes provisions for preservation and rights management, PREMIS may be a standard to consider implementing. A metadata standard.

A.11 ALTO

https://www.loc.gov/standards/alto/v4/alto-4-0.xsd

ALTO (Analyzed Layout and Text Object) is an XML schema that details technical metadata for describing the layout and content of physical text resources, such as the pages of a book or a newspaper. It most commonly serves as an extension schema used within the Metadata Encoding and Transmission Schema (METS) administrative metadata section. However, ALTO instances can also exist as standalone documents used independently of METS. This has limited relation to content platform migrations. If ALTO has been used in the past to describe physical text resources, it can continue to be used on a new platform. If the platform migration is focused on digital resources, ALTO may not be relevant.

A.12 ONIX

https://www.editeur.org/83/Overview/

The ONIX for Books Product Information Message is the international standard for representing and communicating book industry product information in electronic form. ONIX is an XML-based standard for rich book metadata, providing a consistent way for publishers, retailers, and their supply-chain partners to communicate rich information about their products. Although ONIX for Books is a trade product information format, the availability of rich metadata from publishers and others has generated considerable interest in the library community. Data from ONIX sources can be used to enhance the content and presentation of library online catalogs, as well as supporting selection and acquisitions. Library representatives play an active part in a number of ONIX national groups. The Library of Congress and OCLC both provide crosswalks between ONIX for Books and MARC. As another XML-based standard for rich book metadata, reviewing ONIX as a standard, or as a resource for enhancing other metadata, may be warranted during a content platform migration. A metadata standard.

A.13 MARC

https://www.loc.gov/marc/

The MARC formats are standards for the representation and communication of bibliographic and related information in machine-readable form. A MARC record involves three elements: the record structure, the content designation, and the data content of the record. The MARC 21 Format for Bibliographic Data contains format specifications for encoding data elements needed to describe, retrieve, and control various forms of bibliographic material. The MARC 21 Format for Bibliographic Data is an integrated format defined for the identification and description of different forms of bibliographic material. MARC 21 specifications are defined for books, serials, computer files, maps, music, visual materials, and mixed material. With the full integration of the previously discrete bibliographic formats, consistent definition and usage are maintained for different forms of material.

Appendix B
Crossref

Crossref metadata is openly available and widely used. In addition to basic article metadata, Crossref allows significant additional information to be deposited, which is useful in a variety of ways. The following is a list of items that can be part of the DOI registration:

- Basic metadata, including journal, volume/issue, article title, contributors, and URL—this much is required

- Abstract: not required but provides additional discovery information

- ORCID IDs: not required but helps to disambiguate contributors

- References: not required but allow the member and platform vendor to participate in the Cited-by service, meaning they can scan Crossref's database in the future for references back to the article to allow for forward citations to be presented on the platform

- Primary vs. secondary deposits: it is possible to indicate whether the deposit is for a primary site or a secondary site. There are numerous aggregation sites that can provide secondary access to articles, and Crossref can help manage these locations by linking them together and providing users an interstitial page that shows the different sites that include the article

- Crossmark: this is a service that alerts users to whether or not the version of the article they are viewing is the most recent. Only needed if the article appears in full text on multiple sites

- Funder registry IDs and funding award numbers: not required but provides useful information for funders

- Text mining URLs: full-text URLs as part of the deposit that make it easier for text mining applications to find the full text

- License URLs: information about the license that the article is provided under that explains to the user how they can use the content. This is most useful/important for open access content

- Similarity check URLs: URLs used by Turnitin to include the publisher's full text in the iThenticate database. Members need to provide these URLs to be eligible for the Similarity Check service, giving them reduced-rate access to the iThenticate service from Turnitin, allowing them to check their future content for plagiarism

For the most current content registration information, visit the Crossref website (https://www.crossref.org/).

Appendix C
PubMed

C.1 Establishing Basic Info for Migrating Medline Deposits

If any migrating journals are indexed by Medline, the publisher should notify the hosting provider and provide a list of indexed journals. Medline indexing status of each journal can be confirmed by looking it up in the NLM catalog (see Current Indexing Status field): https://www.ncbi.nlm.nih.gov/nlmcatalog/.

The publisher should determine whether new deposits will be handled by the content conversion vendor or hosting provider. It should notify the hosting provider of the decision (as well as the vendor, if applicable). Either party should communicate any additional steps required to set up deposits for launch.

C.2 LinkOut File Updates

All links from Medline records to the publishing platform site are driven by information provided to PubMed in a LinkOut file (https://www.ncbi.nlm.nih.gov/books/NBK3812/). For links to continue to work after migration, a revised LinkOut file will need to be submitted to PubMed. See below considerations:

1) The publisher should determine who will own the LinkOut file for the content. Some hosting providers provide full deposit services and submit all LinkOuts under the platform account, and will take full responsibility for generating and updating a new file on the publisher's behalf. The publisher should work with the hosting provider to determine who will own this file for the new site and who will be responsible for any updates.

2) Publishers typically provide a journal-specific icon (or a single publisher-level icon) to represent each journal in PubMed's records. This icon displays on each PubMed record and links to the corresponding article on the publisher's website. This icon needs to be hosted on the new site, and a corresponding URL should be added to the new LinkOut file. Note that publishers often take this opportunity to redesign their logos. Specifications for these icons are here: https://www.ncbi.nlm.nih.gov/books/NBK3807/#files.Icons. The publisher should supply the icons it would like to use (either existing or new) to the hosting provider. Note that if there is a mix of free and subscribed indexed content, both "free" and "subscribed" icons should be provided.

3) The single most important LinkOut field to update in a migration is the ObjectURL (https://www.ncbi.nlm.nih.gov/books/NBK3812/#ft._ObjectUrl_Specifying_the_Link_to_Acc), which is what PubMed will use to determine how to generate links to content based on information it has received in the deposit. If the hosting provider owns the LinkOut file, it will insert the appropriate link creation rules. If the publisher or other party is taking ownership of the LinkOut file, it will need to work with the host to determine the appropriate information for this field.

C.3 Preparing for Launch

If the publisher is changing to a new deposit provider (e.g., deposits were previously submitted by a content conversion vendor or the prior host, and now the publisher is switching to having its new host deposit), PubMed will need to be notified of the switch prior to launch and will need to know the first volume/issue that will be deposited by the new provider.

The revised LinkOut file with new icon URLs and updated URL creation rules should be submitted to the holdings folder on PubMed's FTP site on launch day. If the hosting provider owns this file, it will complete this step. Forty-eight hours after the file is submitted, all icons and legacy links will be updated to point to the new site.

Appendix D
Library Service Providers

Product Name	Vendor	URL
360 Counter	ProQuest	https://www.proquest.com/products-services/360-Counter.html
Alma Analytics	ProQuest	https://www.exlibrisgroup.com/products/alma-library-services-platform/alma-analytics
ConsortiaManager	ConsortiaManager	https://www.consortiamanager.com
EBSCO Usage Consolidation	EBSCO	https://journals.ebsco.com/products-services/ebsco-usage-consolidation
EBSCO Usage Loading Service	EBSCO	https://journals.ebsco.com/products-services/ebsco-usage-loading-service
eStats	WT Cox	https://www.wtcox.com/estats.cfm
eStats	Harrassowitz	https://www.harrassowitz.de/HARRASSOWITZ_E_Stats.html
Intota Assessment	ProQuest	https://www.proquest.com/products-services/intota-assessment.html
JUSP	Jisc	https://jusp.jisc.ac.uk
LibInsight	SpringShare	https://www.springshare.com/libinsight
MPS Insight	MPS	https://c5live.mpsinsight.com
MPS ScholarlyStats	MPS	https://c5.mpsscholarlystats.com/pages
OCLC Usage Statistics	OCLC	https://help.oclc.org/Librarian_Toolbox/OCLC_Usage_Statistics/010About_OCLC_Usage_Statistics
RedLink Library Dashboard	RedLink/Atypon	https://www.redlink.com
Scholarly iQ	Scholarly iQ	https://www.scholarlyiq.com/
Preservation Services		
CLOCKSS	CLOCKSS	https://clockss.org
Keepers Registry	ISSN International Centre	https://keepers.issn.org
LOCKSS	Stanford University	https://www.lockss.org
Portico	ITHAKA	https://www.portico.org

Appendix E
Sample URLs

The examples below show some common types of links that may be used on or in library websites, catalogs, course pages, social media, emails, and other systems that end users turn to repeatedly for convenient long-term access to content. The examples are for illustration only. This list is far from a comprehensive representation of all the variations. It should be used to start brainstorming on the kinds of links to the previous platform that should be handled by the new platform.

Sample link types and structures:

1) Top-level page: https://content.publisher.com/

2) Journals gateway: https://content.publisher.com/journals

3) Individual journal landing page: https://content.publisher.com/journaltitle

4) Issue landing page (current issue): https://content.publisher.com/journaltitle/issue

5) Issue landing page (specific issue): https://content.publisher.com/journaltitle/issue/vol/issuenum

6) Article landing page: https://content.publisher.com/journaltitle/article/vol/issuenum/Title-of-article

7) Permalink:
https://server.b.vendor.com/login.aspx?direct=true&db=dbcode&AN=dbbcode.itemNumber&site=platform-live&scope=site&custid=customedID&auth=authmethod

8) Vendor OpenURL link:
https://www.publisher.com/openurl?issn=1234567&volume=9&issue=3&spage=339

9) DocID: https://www.vendor.com/article/S0008874917301405

10) Search link: https://www.vendor.com/search?qs=knee
https://www.vendor.com/search?qs=knee&pub=Journal%20Title&id=12345&date=2018

11) Link with session ID: https://server.b.vendor.com/patha/detail/detail?sid=4&sid=0216cb89-3271-4f40-83a3-4cee8b7bba6d%40pdc-v-sessmgr02&bdata=JnNpdGU9ZWRzLWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#AN=dbcode.512775870&db=database

Appendix F
Mailing Lists

- ALCTS Acquisitions Section discussion forum: acqnet@lists.ala.org
  To subscribe: https://lists.ala.org/sympa/info/acqnet

- ALCTS Collection Management Section discussion forum: colldv@lists.ala.org
  To subscribe: https://lists.ala.org/sympa/info/colldv

- E Resources: alcts-eres-request@lists.ala.org
  To subscribe: https://lists.ala.org/sympa/info/alcts-eres

- Electronic Resources in Libraries discussion list: eril-l@lists.eril-l.org
  To subscribe: http://lists.eril-l.org/listinfo.cgi/eril-l-eril-l.org

- EZproxyL: EZPROXY-L@oclclists.org
  To subscribe:
  https://help.oclc.org/Library_Management/EZproxy/Get_started/Join_the_EZproxy_listserv_and_Community_Center

- LibLicense-L Discussion Forum: LIBLICENSE-L@listserv.crl.edu
  To subscribe: http://liblicense.crl.edu/discussion-forum/subscribe/

- LIS-E-RESOURCES: LIS-E-RESOURCES@JISCMAIL.AC.UK
  To subscribe: https://www.jiscmail.ac.uk/cgi-bin/webadmin?A0=LIS-E-RESOURCES

- Lita-erm: lita-erm@lists.ala.org
  To subscribe: https://lists.ala.org/sympa/info/lita-erm

- Serialst mailing list: serialst@simplelists.com
  To subscribe: https://nasig.org/SERIALST

Appendix G
Checklist

A customizable checklist is available at http://bit.ly/niso-cpm-checklist.

This checklist provides a complete list of the steps outlined in the Content Platform Migrations recommended practice with columns denoting migration phase, activity type, stakeholders, related section of the recommended practice, and notes. After downloading the spreadsheet, use these columns to filter, sort, and manipulate the information. These actions will allow an organization to customize the checklist for specific migration tasks.

Recommended customization: Filter first by primary stakeholder, then by phase for a timeline approach, or by activity type for a project management approach.

Note: The "Primary Stakeholder" field indicates the party responsible for taking the recommended actions in the checklist. The "Auxiliary Stakeholder(s)" field indicates those affected by primary stakeholder actions and who may need to act as a result. For example, a publisher (or primary stakeholder) may create a migration resource, but library staff (auxiliary stakeholders) should review it and act accordingly.

Bibliography

Amazon Web Services, *AWS Identity, SAML*. https://aws.amazon.com/identity/saml/

American Library Association, *Professional Resources: A to Z Index of Topics*.
https://www.ala.org/tools/atoz/

Cambridge University Press, *Cambridge Dictionary*.
https://dictionary.cambridge.org/us/dictionary/english/

COUNTER Code of Practice. https://www.projectcounter.org/

Crossref Content Registration Options. Crossref, Lynnfield MA.
https://www.crossref.org/documentation/member-setup/choose-content-registration-method/

Crossref Metadata Deposit Schema. Crossref, Lynnfield MA.
https://www.crossref.org/education/content-registration/crossrefs-metadata-deposit-schema/

Crossref Platform Migration Guide. Crossref, Lynnfield MA.
https://www.crossref.org/education/member-setup/working-with-a-service-provider/planning-a-platform-migration/

Crossref Platform Migration Checklist. Crossref, Lynnfield MA.
https://www.crossref.org/education/member-setup/working-with-a-service-provider/checklist-for-platform-migration/

EZProxy Documentation, *About EZProxy*. Columbus, OH: OCLC.
https://help.oclc.org/Library_Management/EZproxy/Get_started/About_EZproxy

EZProxy Documentation, *EZProxy configuration*. Columbus, OH: OCLC.
https://help.oclc.org/Library_Management/EZproxy/EZproxy_configuration/Introduction_to_database_stanza_directives?sl=en

IEEE/ISO/IEC 26511-2018 - ISO/IEC/IEEE International Standard - *Systems and software engineering - Requirements for managers of information for users of systems, software, and services*. IEEE Standards Association, Piscataway, NJ. https://standards.ieee.org/standard/26511-2018.html

ISO 5127:2017*: Information and documentation — Foundation and vocabulary*. International Organization for Standardization, Geneva, Switzerland. https://www.iso.org/standard/59743.html

ISO 9707:2008: *Information and documentation — Statistics on the production and distribution of books, newspapers, periodicals and electronic publications*. International Organization for Standardization, Geneva, Switzerland. https://www.iso.org/obp/ui/#iso:std:iso:9707:ed-2:v1:en:term:2.32

ISO 13008:2012: *Information and documentation — Digital records conversion and migration process*. International Organization for Standardization, Geneva, Switzerland.
https://www.iso.org/standard/52326.html

ISO/IEC TR 20943-5:2013: *Information technology — Procedures for achieving metadata registry content consistency* — Part 5: Metadata mapping procedure. International Organization for Standardization, Geneva, Switzerland. https://www.iso.org/standard/55026.html

ISO/IEC 20944-1:2013: *Information technology — Metadata Registries Interoperability and Bindings (MDR-IB) — Part 1: Framework, common vocabulary, and common provisions for conformance*. International Organization for Standardization, Geneva, Switzerland.
https://www.iso.org/standard/51914.html

ISO 26324:2012: *Information and documentation — Digital object identifier system*. International Organization for Standardization, Geneva, Switzerland. https://www.iso.org/standard/43506.html

ISSN International Centre. *International Identifier for Serials and Other Continuing Resources, in the Electronic and Print World*. https://www.issn.org

Knowledge Bases and Related Tools (KBART) Recommended Practice. Phase II revision. NISO RP-9-2014. Baltimore, MD: National Information Standards Organization, March 27, 2014. Available at: http://www.niso.org/publications/rp/rp-9-2014/

LexisNexis Glossary. https://internationalsales.lexisnexis.com/glossary/

Library of Congress. U.S. ISSN Center. https://www.loc.gov/issn

MARC Standards. https://www.loc.gov/marc/

PIE-J: The Presentation & Identification of E-Journals. NISO RP-16-2013. Baltimore, MD: National Information Standards Organization, March 25, 2013. https://www.niso.org/publications/rp-16-2013-pie-j

seoClarity *Learning Center: SEO and Content Marketing*. https://www.seoclarity.net/seo-content-learning-center

Standardized Usage Statistics Harvesting Initiative (SUSHI) Protocol. ANSI/NISO Z39.93-2014. Baltimore, MD: National Information Standards Organization, December 05, 2014. Available at: https://www.niso.org/publications/z3993-2014-sushi

PCMag Encyclopedia. https://www.pcmag.com/encyclopedia/

Transfer Code of Practice (Version 4.0). NISO RP-24-2019. Baltimore, MD: National Information Standards Organization, April 08, 2019. https://www.niso.org/publications/rp-24-2019-transfer

Wikipedia. https://en.wikipedia.org/wiki/Main_Page

w3resource.com *JavaScript Tutorial*. https://www.w3resource.com/javascript/