

## **Knowledge Base and Link Resolver Study: General Findings**

Marshall Breeding

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This report summarizes research conducted on OpenURL Link Resolvers and their associated Knowledge Bases. It includes information collected from the providers of these products as well as data provided by the libraries that use them regarding their experiences of their quality and effectiveness. The study focuses primarily on the knowledge bases, though it also examines the functionality offered in the link resolvers. In addition to the these characterizations of the products, the report also provides observations regarding the role that these products play in the broader landscape of library automation and some of the trends currently in motion.

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## **Methodology of the Study**

One thread of work in support of this study involved gathering data from each of the major providers of knowledge base and link resolver products. These organizations included:

- Serials Solutions, a business unit of ProQuest
- Ex Libris, a private company based in Israel
- OCLC, a non-profit library membership
- EBSCO Publishing, a private company based in the United States primarily involved in the production of information products for libraries, and
- The Colorado Alliance of Research Libraries, a non-profit library services organizations based in Denver, Colorado.

The process of information gathering included telephone interviews, submission of questionnaire with requested data, and e-mail exchanges. For open source projects, including the CUFTS resource created at Simon Fraser University and the Kuali OLE Global Open Knowledge Base, information was gathered from Web sites and other available sources.

In order to gauge the effectiveness of the products, a survey was developed and executed to capture responses from libraries regarding their impressions of their current and previous link resolvers, their assessment of the completeness and quality of the associated knowledge base, and requesting narrative comments in each topic area.

A review of the published literature was performed to gain additional insight and information on recent projects, initiatives, and reports on the topic of knowledge bases and link resolvers.

## **Section I. General Background and Perspectives on Link Resolvers and Knowledge Bases**

Knowledge bases of e-resource holdings and link resolvers form part of the operational infrastructure needed for the management of electronic resources and for facilitating end-user access. Libraries involved with providing access to large collections of electronic resources require a reliable, efficient, and scalable mechanism for linking to the individual items of content. The expansive and fluid nature of these collections makes it unsustainable to provide access through manually encoded links to e-journals and the individual articles within them. In contexts such as the search results of citation databases, discovery layers, or the references within full-text articles libraries expect the capability to present links that take users to the corresponding articles within their collections based on the subscriptions currently in place. The process of creating links from citations to the full text of the articles they describe is fraught with complications. It requires technologies such as link resolvers and highly-accurate knowledge bases capable of handling an immense, irregular, and quirky universe of published scholarly content.

The sheer volume and unstable nature of the resources involved in a typical academic library's collections of electronic resources defies manual management of hard-coded links. Events that happen routinely in the scholarly publishing arena break static links and require systematic updates. Any given title might transfer over time through a succession of publishers and may be delivered through different aggregators and may be covered by different indexing and abstracting services. Technical changes that publishers might make in their platforms can impact the construction of URLs that link to these content items. Any given item might be present in several different content packages offered by different vendors and is essential for a library to direct their users to the version available through their subscriptions and not to other versions that will either not be accessible by them or would require a per-use payment.

An information ecosystem based on OpenURL has emerged to manage linking in a scalable and efficient manner. In this ecosystem, sources present links from citations formulated as an OpenURL, following a standardized structure that presents metadata or identifiers describing the resource instead of a hard-coded link. The OpenURL includes the Base URL that references the link resolver provided by the user's library. The link resolver then interprets the OpenURL and calculates the best link to connect the user with the full text of article, or presents other relevant services if the full text is not available. Link resolvers rely on a knowledge base that describes the universe of available content resources, scoped to the resources made available by their library. The library would configure their instance of the link resolver to identify the content packages, e-journals, or other materials to which it subscribes as well as selected free and open access resources. This environment of context-sensitive linking based on OpenURL-based link resolvers and knowledge bases was initially proposed by Herbert Van de Sompel and Patrick Hochstenbach at the University of Ghent in Belgium in 1999 in a project called SFX, which was licensed and commercialized by Ex Libris in February 2000, and has sparked the slate of competing products that this report describes.

## Knowledge Base characteristics

The knowledge bases covered in this report house data related to body of electronic resources of interest to libraries. This body of content includes articles from e-journals, e-books, book chapters, and other materials acquired through a variety of different content products ranging from individual e-journal subscriptions to massive multi-disciplinary aggregated databases. Rather than each library taking on the laborious process of maintaining detailed information regarding the variable lists of materials that reside within each of their subscription packages, they can rely on knowledge bases maintained on behalf of a broader library community. An organization that produces one of these knowledge bases would bring to bear more technical and personnel resources than might be available in any individual organization.

The key purpose of these knowledge bases involves tracking the contents of content packages to which libraries subscribe in a manner that describes the specific materials covered including the span of dates or issues covered for each title and details relevant to linking to those items. Any given package offered by a content provider will vary over time. Arrangements with primary publishers come and go, causing the specific e-journal titles within an aggregated content product to vary. Publication arrangements for e-journals frequently undergo transfers among publishers and aggregators. The depth of back issues

available will change as new materials are digitized. Changes in business agreements between primary publishers and aggregators happen continually, often with major implications for the coverage within packages. This constant flux in the coverage of e-content packages demands a systematic and collective approach since having each library attempt to manage this data individually is unsustainable.

Today, no freely available centralized database exists that comprehensively describes the e-holdings associated with library content packages. Instead, several independent knowledge bases have been created, initially in support of link resolver products, but with increasing applicability to additional products related to end-user discovery and in-library automation. Each of these knowledge base developers acquires data from all the many publishers and providers content of interest to libraries, massages and manipulates it to repair known errors.

The creation and maintenance of an e-content knowledge base requires an ongoing investment of both automated and manual processes to achieve reasonable levels of comprehensiveness, consistency, and correctness. It requires a continual flow of information from publishers and significant effort to enforce consistency, eliminate errors, and to ensure completeness. The OpenURL linking process has proven to be very fragile, with even minor inconsistencies resulting in dead-end links and other end-user frustrations.

Knowledge bases and link resolvers find use primarily in academic and research libraries. Although public libraries are becoming increasingly invested in electronic resources—especially e-books—they have not been heavily involved in the market for link resolvers and knowledge bases. The technical infrastructure for managing e-books and managing their loans to patrons is quite different from the electronic resource management tools used by academic libraries to manage their electronic collections.

## Preliminary Observations

Link resolvers and their associated knowledge bases entered the market just over a decade ago as stand-alone products that operated largely independently of existing library management systems, online catalogs, or discovery interfaces. Today, knowledge bases are increasingly positioned an integral component of a broader set of interrelated products from each vendor, including not only link resolution, but also federated search, electronic resource management, discovery, and as a key asset in next-generation library automation platforms. Some of the companies offering linking and knowledge bases have primary roles as content providers and these products may form part of the integrated infrastructure of their content delivery platforms. Other organizations focus primarily on creating technology products and develop their knowledge base to support them. For example:

- Ex Libris focuses primarily on creating technology products for academic and research libraries. Its SFX Global Knowledge Base supports its SFX OpenURL link resolver, Verde electronic resource management system, MetaLib federated search environment. It has also been incorporated into the company's next-generation library services platform, Alma, as part of the Community Zone of shared information assets.
- OCLC, the global library membership organization has developed the WorldCat Knowledge Base. It supports link resolution within its WorldCat Local discovery service and is integral to the new

WorldShare License Manager and for WorldShare Management Services, components of the organization's strategic suite of library management applications. It was formerly associated with the OCLC WorldCat Link Manager, a stand-alone link resolver, which recently has been withdrawn.

- Serials Solutions, a business of the large publishing company ProQuest, created KnowledgeWorks as the basis of all its strategic products, including 360 Link, 360 Resource Manager, 360 Search, and Summon. In an extended form, KnowledgeWorks will also form the core of the company's Intota platform.
- EBSCO Publishing has developed a knowledge base to support its technology products related to access and management of electronic resources, including LinkSource, its OpenURL link resolver; ERM Essentials for management of subscriptions, EBSCO A-to-Z, EBSCO Discovery Service, as well as the company's flagship EBSCOhost platform for the delivery of its content offerings.

One of the key trends in the automation arena for academic and research libraries involves the emergence of a new genre of library services platforms that aims to comprehensively manage all library materials: print, electronic, and digital. The knowledge bases that formerly stood outside the core library automation system will be integral components of these new library services platforms.

In the current dynamics of the library automation environment, link resolvers and their associated knowledge bases are positioned less as stand-alone products offered separately, but as part of the infrastructure of a company's strategic product suite. In each of the product families mentioned above, the knowledge base is integrated with both discovery and automation products. Using a third-party knowledge base in most cases will introduce redundant efforts of synchronizing the library's electronic holdings among multiple knowledge base or linking products. It remains possible to mix and match link resolvers and their knowledge bases with automation or discovery products from other providers, but such an arrangement comes with a higher burden of maintenance.

Some libraries have already migrated away from link resolvers and knowledge bases previously in place to achieve better alignment with newly acquired discovery services. For example, if a library already has SFX and acquires Summon it may choose to shift to 360 Link; libraries that implement Primo will want to use SFX, and may elect to move from other link resolvers in place. WorldCat Local comes with built-in resolution through the WorldCat knowledge base, mitigating interest in operating non-OCLC link resolvers. Libraries heavily invested in EBSCOhost resources and the EBSCO Discovery Service might gravitate toward LinkSource. The differences among the link resolvers are increasingly trumped by broader integration concerns.

While we observe these trends toward product suites from a given vendor, interoperability through APIs (application programming interfaces) will be of key interest to libraries that want to tap the knowledge base beyond the vendor's own applications. The levels of interoperability through APIs do not necessarily allow a completely flexibility mix-and-match approach among knowledge bases and related linking and discovery products. The structural dependencies between a vendor's discovery, linking, and management products and their own knowledge base cannot easily be overcome through API integration.

Data from the library survey conducted in support of this project provides many examples where decisions regarding link resolvers and knowledge bases are driven by higher-level automation strategies, in both discovery and resource management. These patterns are revealed through the responses provided regarding current and previous link resolvers and through the narrative comments that explain the changes.

In the emerging phase of library automation, many academic and research libraries are and will be moving toward new discovery and automation platforms which rely more on shared data models than traditional integrated library systems. The knowledge base of e-resource holdings may be one of many shared data stores that drive these new platforms. It will be less common for link resolvers with their associated knowledge bases to be acquired individually. While the characteristics of the knowledge base will be one of the factors by which these new products are evaluated, decisions will be made regarding higher-level strategic platforms.

Despite this trend toward integration within product suites, link resolvers implemented as standalone applications in the context of discovery and automation applications from other providers will not disappear anytime soon. We can expect the current set of OpenURL link resolvers to continue to be supported for many years, even as the companies that developed them also create new-generation products.

One of the initial goals of the study involves identifying quantitative and qualitative assessments of each of the knowledge bases. The diverse ways in which each major knowledge base is structured defies meaningful comparisons of the products based on numbers alone. Whether in a response to a library's procurement process or in a study such as this, vendors report statistics that may not necessarily be comparable to those provided by their competitors. This report quotes the statistics reported by the knowledge base developers, but they should not be considered as the basis for comparisons regarding the extent or scope of the products. The numbers cited generally refer to different ways of measuring the size and extent of the knowledge base. Current snapshots of knowledge base size may not necessarily stand as the best differentiators relative to larger strategic questions.

We can expect that the knowledge base products will become less differentiated in terms of quantity of materials covered over time. As the KBART recommended practices become broadly implemented, each of the knowledge base providers will have access to the same source data and from roughly the same set of content providers. Content providers will make their KBART compliant source lists available to any interested knowledge base producer, ultimately resulting in some leveling of the quantity and quality of data available among knowledge bases.

It can be reasonably understood that each of the knowledge base providers incorporates very similar representations of the body of content products to which academic and research libraries subscribe. We did not identify cases where one knowledge base provider had gained access to data regarding major content packages that was not available in competing products. The preliminary results of the library survey did not reveal dramatic differences among the perceived comprehensiveness of the

knowledge bases, and positive ratings in this category did not correlate with perceived effectiveness in end-user linking.

## **Section II. Summaries of the Key characteristics of each knowledge base**

This section provides findings regarding the characteristics of the knowledge bases generally available. Questionnaires were provided to the developers of the major commercial products, including Ex Libris, Serials Solutions, EBSCO, and OCLC. Information regarding the community supported products was gathered from their Web sites and from correspondence with the sponsoring institutions including the Colorado Alliance for Research Libraries and Simon Fraser University.

Much of the content of this section includes responses from each of the vendors in response to the questionnaire. These responses will be placed in quotations to distinguish them from paraphrased summaries or other commentary.

## **SFX and the SFX Global Knowledgebase from Ex Libris**

Ex Libris ranks as one of the largest companies in the global library automation industry. The company specializes in software products for research and academic libraries. In addition to SFX and its Global Knowledge base covered in this report, Ex Libris offers two major library management systems, Aleph and Voyager, the Primo and Primo Central discovery products, Verde electronic resource management system, the Rosetta digital preservation platform, DigiTool digital asset management, and a variety of other products and services. Recent development efforts have been focused on the creation of Alma, the company's new library services platform which is expected to be available in general release in mid-2012.

### **General Comments**

Ex Libris provides the SFX link resolver, based on the SFX Global Knowledgebase it maintains on behalf of its customers, though it relies on error reports from its customers as one of its channels for amendments and corrections. SFX stands as the original OpenURL link resolver, with initial development at the University of Ghent. Ex Libris acquired the rights to the technology in February 2000 and has offered SFX as a commercial product since 2001. The company facilitated OpenURL as the *de facto* method for context-sensitive linking and was a key participant in the establishment as a NISO standard. The SFX Global Knowledgebase has expanded significantly in the course of the last decade and continues to be a core component of many of the products and services of Ex Libris. Ex Libris reports that "link resolution has also been a core service in Alma from the outset and we anticipate that our investment in this area will continue far into the future."

### **Knowledge base Characteristics**

This section provides details related to the SFX Global KnowledgeBase which was created to support SFX.

#### ***Current Versions***

SFX and its underlying Global KnowledgeBase come as a single stand-alone product. SFX Version 4.0 was released in July 2010; Version 3 was released in December 2004; Version 2 in January 2003; Version 1.0 in 2001. Ex Libris reports: "Customers have the choice to decide if and when they upgrade their knowledge base and their software version. With few exceptions, SFX customers are now using SFX v. 4."

#### ***Configuration and Administration***

"The SFX administration tools allow a variety of user interface and content configuration options, provide ERM functionality, and enable the institution to generate reports and statistics. Changes to the data, activations, definition of targets precedence and display logic in the menu, generation of A-Z journal title lists and more are all easily managed from the admin module. Changes can be made visible to the end user immediately. Customers may edit parts of the SFX code, (e.g. end user screens), to design the exact behavior and user interface they would like to offer, with processes that ensure that SFX upgrades do not overwrite customer changes (e.g., changes to the templates). Because it is based, mostly, on non-compiled PERL scripts that are open to customer, SFX allows customers to enjoy the flexibility, adaptability, and community interaction that are typically associated with open source."

### ***Content and Coverage***

Ex Libris did not provide specific statistics regarding the coverage of the SFX Global Knowledge base and suggest that such numbers can be misleading regarding the evaluation of these types of knowledge bases. The company provided the following narrative characterization of the SFX Global Knowledgebase:

“SFX KB serves the majority of the high-end academic institutions and covers the extensive information needs by their researchers.

SFX KB includes the information needed for institutions to offer a large number of services and content types. The SFX KB is non-biased and not driven by specific content providers. We focus on representing global and regional materials, enabling customers to add local targets, objects, and services. We are adding global and regional targets constantly, relying on feedback and requests from the SFX customers, votes managed by the customers' SFX Product Working Group, and our own research to select new targets and prioritize the order in which targets are added. We increase the number of packages and targets in the KB by around 10% per year.

The SFX KnowledgeBase maintains information about relations between objects. For example, if a journal ceases to exist and is continued by another journal, the two journals are considered related. Also, if one journal is a supplement to another journal, the two journals are considered related. These object relations may be valuable for end users when searching or browsing the SFX A-Z journal title list or even when clicking an SFX button in a database: users may remember the previous journal name, or they may be interested in SFX services for a related journal.

SFX KB is characterized by the quality of the material it covers. For example, we put an emphasis on journal articles and less so on newspaper articles.”

### ***Quality of bibliographic data***

“Changes and additions in the KnowledgeBase originate from multiple sources. Primarily, these changes originate from vendor's input; through automatic and manual loads that are run on regular basis; and from information we glean from press announcements, web pages, and topical listservs. Another source of information is the customer community.

Quality assurance measures include a variety of tests and checks at multiple stages. These tests are enhanced and refined continuously. Pre-load validation scripts are run on the vendor files, verifying both the data in the files as well as file structure changes. Additional post-load validation scripts ensure that the data has been loaded correctly. The loaded data undergoes automatic quality assurance scripts that are run on the different layers of the KB to ensure the data sync on all levels. Additional automatic and manual pre-revision checks are run before building the KB revision and again before its release.

We also check on vendor sites, in parallel to the checks of the files received from vendors themselves, to catch discrepancies. As a result, we are in regular communication with vendors and report any data problems.

Objects' metadata is checked and corrected using both CONSER and ISSN.ORG.

Ex Libris KnowledgeBase and Publisher Relations teams communicate frequently with information providers, with the goal of encouraging more information providers to make their data available and KBART-compliant.”

#### ***Frequency of Update***

“The SFX KB is updated regularly on a weekly basis. (with the option of faster insertions as needed)”

#### ***In-flow of Resources***

“KB targets are regularly maintained by Ex Libris KB team to ensure the accuracy of both content and linking. We typically establish close contact with the data producers (vendors), and receive the most updated, accurate data available for the KnowledgeBase, in the most timely fashion possible. Members of the Ex Libris Publisher Relations unit contact vendors and communicate our update requirements, and the vendors provide us with regular data feeds. Data received from the vendors is checked for format and completeness, loaded to the KnowledgeBase and undergoes quality assurance checks before it is released to customers. In the majority of cases, we set up regularly scheduled automatic uploads of vendor data. For targets that cannot be updated automatically, updates are carried out via manual loading of data we receive from the vendor.”

#### ***How are errors and omissions reported by libraries incorporated?***

“Customers can report errors and omissions via the support e-center (CRM). Libraries can also contact support by opening a support incident directly through links from the SFX Admin interface without needing to access the support e-center.”

#### ***Time until confirmed errors are corrected***

“After a support incident is submitted, customers receive a first response within 1-2 days. Most errors are corrected in the KnowledgeBase update within two weeks. If the support issue is urgent, customers receive a fix within 24 hours of reporting the err”

#### ***Number of FTE allocated to KB development and quality assurance***

“There are multiple teams involved in KB content, development, and quality assurance and FTEs are allocated dynamically on a per need basis. There are 29 FTE's involved with the KB content, development, and quality.”

#### ***Relations with content providers***

“The Ex Libris Publisher Relations unit reviews the records from new content providers and determines whether the content is indeed relevant scholarly material and compatible with SFX. To facilitate the inclusion of data in the SFX KB, the team offers the content providers detailed documentation of the technical requirements. The various Ex Libris teams regularly monitor the accuracy of the data and the links and work with vendors to alert them and correct any errors.”

#### ***Subject Areas Covered.***

“The SFX Global Knowledgebase covers all scholarly subject areas”

### ***Non-English material covered in the knowledge base***

“Global as well as regional materials (both in English and other languages) are represented in the SFX KB. Having customers in 62 countries, we aim at optimally addressing regional needs as well as global needs.”

### ***Local extensibility***

“Every library can add its own local objects, targets, and services to those available in the global KB.”

### ***Process for localizing KB***

“Through the admin UI, customers can easily add new local objects and packages on top of those that exist in the global KB. Customers can also change the existing objects and packages to better fit their unique packages. KB elements can be locally configured as needed, including object metadata, package content, and linking thresholds and syntaxes.”

### ***Handling of local content not present in knowledge base***

“The SFX global Knowledgebase is part of the customer's SFX installation and is maintained and updated by the EX Libris KB team. The team also prepares regular updates. In addition, customers may choose to modify or add their own local objects and packages. The regular KB updates will not overwrite the localized content.

Towards the end of the year [2012], we will add relevant new functionality that will facilitate customer contribution to the global KB. Starting by loading a number of free and miscellaneous targets, this new functionality will allow customers to share their local work with the SFX community.”

### ***E-Book Support***

E-books are included in the SFX Global KnowledgeBase

### ***E-Book Chapter-level metadata***

“SFX supports chapter-level linking. Unfortunately, many of the sources do not provide the information required for chapter-level linking, and many targets do not support chapter level-linking yet. However, we believe that this situation will be changing in the future. When a DOI or a source-specific internal identifier is available, we use this information to link to the chapter, when possible. Our vision is to enhance chapter level linking using predefined links at the item level (item-level linking).”

### ***Link Syntax Management***

“SFX customers have full control over the link syntax. Libraries can use the syntax that is provided in the KB, adjust it, change it, or use their own syntax, thresholds, and linking parameters.

- Customers can change and localize links or set up new ones, if they wish to do so.
- SFX KB includes multiple levels of elements—objects (such as journals or monographs), targets (such as specific packages), target services (such as GetFullText) and thresholds (such as coverage dates)—that together enable SFX to generate the appropriate links. All the parameters can be configured by the library.
- Customers can configure, for example, the metadata and identifiers of objects; the targets and the target services; and the thresholds and the linking parameters. In addition, customers can

use existing plugins to fetch data such as ISBN, and DOIs and use it in the link to the target. Other plugins check the existence of a monograph in Google Books, or the ILS holdings, for example, prior to displaying a link to the corresponding service."

### ***Peer reviewed material***

"Based on samples, we believe all peer reviewed journals are supported in SFX KB. 25,753 unique journals are indicated as peer reviewed in the SFX KB."

### ***Documentation of content***

"SFX offers extensive export tools that can be run at any time, in addition to update reports and release notes that we provide with every KB update"

### ***Common problem cases***

"The KB can manage multiple identifiers, including multiple ISSN/ISBN per title; SFX supports multiple titles per object including abbreviation, alternative, translation and uniform titles. In addition, customers can add their own local titles to objects. The SFX Knowledgebase contains multiple titles for CJK language objects in case they are needed for language and 'locale' specific searching and sorting. SFX supports searching by new and old Kanji variants."

## **Compatibility and Integration**

### ***Relationship between KB and vendor's own discovery solutions.***

SFX is integrated with Primo, to provide the following services:

- Direct linking to full text from the Primo record
- Links to all additional services available for that record via SFX menu
- The SFX holdings file is used by Primo Central Index to determine the library specific availability of the Primo Central records.
- The SFX rapid service indicator (RSI) provides information about resources' availability for meta-searching via Primo and MetaLib.
- The SFX e-journal A-Z title list

### ***Relationship between KB and vendor's own ERM solutions.***

"Ex Libris Alma ERM includes an embedded link resolver that is offered as a standard functionality and is included in the Alma subscription fee (no additional costs). Alma central knowledge base is tightly integrated in the electronic resource purchasing and management workflows:

- Electronic resource purchase and management workflow starts by locating the required resource in the CKB or, if the required resource is not part of the CKB, by creating a local electronic resource. Once the new resource is in place, the operator can initiate an acquisition workflow, which may begin with a trial, pass through purchasing, and ultimately end up in activating the resource:
  - Trials: trials can be managed within Alma, giving the trial manager the option to create a trial that is either an internal trial or a trial that is open for the public. As part of the trial management, the trial manager can create a survey form, receive feedback, and analyze

- the responses. Based on the analysis, the operator can decide whether to acquire the resource or not.
- Purchasing: purchasing of electronic resources is based on a workflow engine which automates the process
- The workflows include automatic processing of purchase orders as well as staff mediation for approval and exceptions per the library's rules.
- Activation: the Alma activation workflows for electronic resources include the ability to integrate institution-specific workflow for managing and tracking the activation workflow status. For example, verify, via the Alma embedded link resolver functionality, that the resource is available; proxy setup; and activate the electronic resource, making it available to patrons via the discovery system.”

“Additional ERM services, as part of the SFX fee include Statistics, collection analysis (overlap and duplicate reports), UStat (COUNTER reports)”

#### ***Compatibility with external link resolvers, ERMS products, and discovery services.***

“Using the built-in set of application programming interfaces (APIs), institutions can easily integrate the SFX functionality with various systems in the library, such as metasearch systems, virtual leaning environments, and unmediated document-delivery systems, to seamlessly enrich those systems' functionality. Umlaut, for example, is an open source 'front end', originally developed at Georgia Tech, that uses the SFX API (<http://umlaut.rubyforge.org/>).”

“SFX is fully compatible with other discovery systems. In particular, SFX can be integrated with other discovery systems allowing accurate link resolution and supplying the libraries holdings file for availability calculations.”

#### ***APIs and integration options***

“Using the built-in set of application programming interfaces (APIs), institutions can easily integrate the SFX functionality with various systems in the library, such as metasearch systems, virtual leaning environments, and unmediated document-delivery systems, to seamlessly enrich those systems' functionality. For example, relying on the SFX APIs, a third-party application can display an e-journal list along with full text and peer-review indicators where applicable.”

“SFX is highly interoperable through documented and supported open interfaces, allowing seamless integration with other systems in the library”

#### ***Options for exporting data***

“SFX offers flexible export tools allowing the customer to extract records in MARC and MARC XML formats. Customers can export data as often as needed. SFX offers integrated Google Scholar registration and the regular extract of the Google Scholar XML holdings file, which can be used for Google Scholar or any other system.”

### *Generation of MARC records from the knowledge base.*

“SFX includes flexible export tools allowing the customer to export data to MARC and MARC XML formats. Customers can run the export process as often as needed. In addition, Ex Libris offers the MARCIt! service to enrich the extracted MARC records with metadata from CONSER (for serials).”

### *Use of CONSER records*

“Ex Libris offer the MARCIt! service to enrich the MARC record, exported from the SFX KB, with metadata from CONSER. CONSER is also used by the KB team to check the accuracy of new object metadata and complete it, when needed. In addition to CONSER, which represents mainly North American content, we also use ISSN.ORG to check the accuracy of new object metadata and complete it, when needed.”

## **Standards and Best Practices**

### *KBART Endorsement and Standards*

“Ex Libris was among the first organizations to publicly endorse the Phase I recommendations of KBART. Ex Libris are actively involved and have a representative on the committee working on KBART Phase II.”

### *Standards and Identifiers Supported*

The following standard identifiers are used by SFX to identify the correct objects and are stored in the SFX KB: ISSN/eISSN, ISBN/eISBN, CODEN, DOI, LCCN, OCLC, Local identifiers, SFX Object ID. SFX also fetches the following identifiers to link to article level: DOI and PMID.”

## **Features and Functionality of the Link Resolver (SFX)**

This section describes some of the features available in the SFX link resolver.

### *Customization options:*

“Libraries have full control over all customization options, and all changes take effect immediately. A library can perform the following types of customization:

- Modify the look and feel of the user interfaces, including text, graphics, and the use of style sheets
- Define the order of services on the menu
- Set any number of conditions under which a service appears on the menu, including the following:
  - Date coverage (to show a link to full text only if it is available to the user based on year, volume, and issue)
  - Availability of metadata (for example, to show links to an author search only if the author’s name is available; or show links to an Internet bookstore only if the source item is a book)
  - User affiliation (based on the IP address or the user’s institution)
  - Exclusion or inclusion based on the origin of the OpenURL (for example, to hide a link to the print holdings if the user clicks the SFX button in the OPAC)

- Availability of an item in the target system (for example, to show a link to the print holdings only if the item is available in the OPAC). The availability is determined on the basis of a pre check.
- Libraries can create its own pre check programs (plug-ins) and associated configuration files
- Set rules regarding the display of services in a specific context (“display logic”). For example, a library can opt to display a document-delivery service only when the electronic version of an article is not available to the user. In addition, the library can set conditions under which the display logic kicks in—for example, for a specific source or for all resources but one; or for a specific material type, such as a book, an e-book, or an e-journal.
- Apply the “direct link” feature, which, under certain circumstances (for example, when the user clicks the SFX button in a specific source or when full text is available), links the user directly to the electronic full text, skipping the display of the SFX menu. This feature can be configured to display a menu banner that shows the library’s local banner above the full text page and includes a link to the SFX menu.”

### ***Custom service options***

“SFX offers multiple, out-of-the-box target services to which the library can choose to link (depending on the target):

- **getAbstract** - Supported by services that display a short content description of an article
- **getAlikeRecord** - Supported by services that display a similar record to the one requested
- **getAuthor** - Supported by services that display information about the publications of an author given his/her name
- **getAuthorEmail** - Supported by services that display information about the e-mail address of an author given his/her name
- **getBookReview** - Supported by services that display a short review of a book
- **GetCitedAuthor** - Supported by services that display information on the number of citations for an author
- **getCitedBook** - Supported by services that display information on the number of citations for a book
- **getCitedGenome** - Supported by services that display genome information given a genUID
- **getCitedJournal** - Supported by services that display information on the number of citations for a journal
- **getCitedRecord** - Supported in its current version only by Medline or the PubMed database where a record is displayed given a medUID
- **getCitedReference** - Supported by services that display information on the number of citations for an article
- **getDocumentDelivery** - Supported by services that offer a document delivery service
- **getDOI** - Supported by services that display the electronic content of an article or book based on the DOI value
- **getFullTxt** - Supported by services that display the electronic content of an article or book
- **getHolding** - Supported by services that display holdings information for articles, journals, books
- **getMessageNoFullTxt** - Provides an option for the display of a No Full-Text Available message in the SFX menu
- **getPayPerView** - Supported by services that offer a pay per view service
- **getRecommendation** - Supported by services that offer recommendations, such as bX
- **getReference** - Supported by services that display the references of an article

- **getSelectedFullTxt** - Supported by services for databases that do not have cover-to-cover representation of their journals. This service type will allow SFX to add more content, and give the library the opportunity to arrange how this content is presented to the patron.
- **getSubject** - Supported by services that display subject information
- **getTOC** - Supported by services that display the table of contents of a journal or a book (given publication year, volume, issue)
- **getWebSearch** - Supported by services that start searches on the Internet
- **getWebService** - Supported by services that offer general Internet services”

### ***Control order of service or link presentation***

“SFX allows the library to easily create and set rules regarding the display of services in a specific context (“display logic”) through the admin interface. For example, a library can opt to display a document-delivery service only when the electronic version of an article is not available to the user. In addition, the library can set conditions under which the display logic kicks in—for example, for a specific source or for all resources but one; or for a specific material type, such as a book, an e-book, or an e-journal.”

### ***Alphabetical lists of resources?***

“SFX includes an e-journal A-Z list and an eBook discovery tool providing users with easy, fast access to the library’s electronic collections. In addition, SFX offers the SFX Citation Linker, enabling users to locate articles and other e-content regardless of the content’s location.”

### ***Link to full text***

“SFX allows the library to select the relevant services and to define direct link and display logic by which the services are presented to the users. Customers can choose the services displayed in addition to the link to the full text or in the absence of such link.”

### ***Direct Linking***

“SFX allows the library to define what targets and service to use for direct linking. When direct linking apply, the system does not display a menu to the user; rather, it links the user directly to the full text.”

### ***Handling of Physical holdings***

“SFX covers all library resources, not just e-resources. When relevant, SFX will display the holdings of print materials managed in the library’s ILS. The display of holdings can be set to verify the availability of an item in the target system (for example, to show a link to the print holdings only if the item is available in the OPAC).”

### ***Document Ordering***

“SFX supports the use of document delivery targets; such targets can be easily be configured by customers. In addition, SFX includes a target for Copyright Clearance Center’s “Get It Now” service. This first-of-its-kind service enables SFX users in the United States to receive, within minutes, PDF copies of articles from journals to which their library doesn’t subscribe (instead of invoking document delivery request).”

### ***Print on Demand***

“Ex Libris customers have not requested that Print on Demand be added to the global KnowledgeBase. Customers can use SFX’s flexibility to develop plug-ins that invoke Print on Demand services.”

### ***Interlibrary Loan Request***

“SFX supports inter-library loan targets; such targets can be easily configured by customers. In addition, the CCC Get It Now service mentioned above can be seen as an alternative to ILL.”

### ***Service to search WorldCat***

“SFX links libraries to OCLC WorldCat (the OCLC Online Union Catalog) and other OCLC services if libraries subscribe to both SFX and the OCLC service. The links to OCLC make library collections and services more visible and accessible to information seekers. The program provides users with WorldCat holdings for the libraries in their region.”

### ***Service to search OAster or other open access targets***

“SFX includes multiple targets such as DOAJ, SCIELO, PUBMED, BENTHAM, DIALNET that offer open access and free material.”

### ***Link to ILS***

“Link to record in ILS are easily set up in SFX.”

### ***Reference Tools supported***

RefWorks, EndNote, Reference Manager, Zotero.

### ***Pricing and Availability***

SFX is offered through an annual subscription model or through an initial license fee plus annual maintenance. Pricing will vary depending on number FTE's.”

### ***Numbers of Installations***

**Number of libraries using SFX.** “More than 2350 institutions in 62 countries worldwide are using SFX as their link resolver, including many large consortia, academic library systems, national and state libraries. In addition, customers of the following products use information from the SFX KnowledgeBase in their respective products: Primo: 910 institutions, MetaLib: 1746 institutions, bX: 1098 institutions, Alma: over 60 institutions.”

### ***Option to license KB separate from the link resolver***

“Solutions such as Umlaut use the SFX API and essentially are using their own 'front end' over the SFK KB through the SFX APIs.”

### ***Option to license Link Resolver without KB***

“SFX is designed to work with the SFX KB structure and data.”

### ***Vendor Services, Products, and Future Directions***

Ex Libris offers a wide variety of services related to SFX and its Global KnowledgeBase as well as many other strategic technology products for libraries.

## ***Implementation***

“When purchasing SFX, Ex Libris Professional Services accompany customers during the implementation process until the customer is ready to go live.”

## ***Hosting***

Ex Libris offers SFX through three different hosting scenarios:

1. through a software-as-a-service model where Ex Libris manages technical and operational details
2. as a hosted solution, where the hardware and software are hosted by Ex Libris, but the library maintains the server and has access to the admin module with full control over the configuration of SFX and its knowledgebase
3. as a locally implemented on premises application. Consortia can also act as a service center for their members.

## ***Related Products***

“The bX scholarly recommender service can be used in conjunction with SFX, to provide library users with article recommendations relevant to their research.”

## ***Current Technology infrastructure***

“SFX uses MySQL as its database.”

“When installed locally, the following operating systems/platforms are supported by SFX:

- Sun — Solaris 9 and 10, based on SPARC processors; Solaris 10, based on x86 processors
- Linux —Red Hat Enterprise Linux AS/ES 4 (Update 3 or later) 32-bit and Red Hat Enterprise Linux AS/ES 5 (Update 2 or later) 64-bit, based on Intel or AMD 64-bit processors.”

## ***Future development plans***

“Ex Libris has an extensive roadmap to further develop our knowledgebases. The knowledge base of electronic material is a core element in the overall services of Ex Libris, including those provided by Alma, and we aim at creating a platform that customers can configure and to which they can contribute.”

## ***Platform Migrations***

“The SFX KB is used by the Alma Central Community Knowledgebase. SFX will continue to be offered as a separate product.”



## **EBSCO: LinkSource and EBSCOhost Integrated KnowledgeBase**

EBSCO Publishing ranks as one of the largest providers of content products to libraries. The company's EBSCOhost platform aggregates abstracting and indexing databases, e-journals, e-books and other resources. In addition to its flagship content offerings, the EBSCO offers technology products that facilitate the access and management of electronic resources. EBSCO's deep involvement with the provision of content products provides a strong foundation for its product offerings in the broader realm of discovery and resource management.

The company's discovery-oriented products include:

- EBSCOhost Research Databases
- EBSCOhost Integrated Search
- LinkSource OpenURL link resolver
- EBSCO A-to-Z e-journal finding aid
- EBSCO Discovery Service

Management products include:

- EBSConet Subscription Management
- EBSConet E-Package Renewals
- EBSConet ERM Essentials
- EBSConet Usage Consolidation
- EBSCO MARC Updates

### **General Comments**

EBSCO participates in the OpenURL linking arena primarily from the perspective as a publisher of aggregated databases delivered through its EBSCOhost platform and as a subscription agent for libraries. These two business activities provide a variety of synergies toward the development of knowledge bases of e-content holdings and for link resolution. EBSCO initially launched the LinkSource link resolver in 2003 and has steadily expanded its portfolio of technology products related to linking, access, and management of electronic resources.

In addition to the vendor-neutral linking through LinkSource, EBSCO also provides a proprietary SmartLinks+ technology for creating direct links to full text available in its own EBSCOhost databases or EBSCO e-journals.

### **KnowledgeBase Characteristics**

The EBSCO Integrated Knowledge Base serves as the basis for all of the company's discovery and management products. While the EBSCOhost and EBSConet product families operate on separate platforms, they share the EBSCO Integrated Knowledge Base as their core knowledge base.

### ***Current versions***

EBSCO's LinkSource product was initially launched in January 2003. A major update was released in December 2005 that emphasized more complete integration with the EBSCO A-to-Z and its underlying

knowledge base. The product receives ongoing enhancements but is not assigned release or version designations.

### ***Configuration and Administration***

Profiling and configuration of LinkSource and the EBSCO Integrated Knowledge Base are administered through the EBSCO A-Z Administrator site.

### ***Content and Coverage***

EBSCO provides some statistics that describe the extent of their knowledge base:

- E-journals: 231,879
- e-books -- title level: 615,000
- Newspapers/ Newsletters: 16,600
- Proceedings: 18,740
- Reports: 37,860
- Audiobooks: 17,400
- Journal Issues (for integrated TOC Browse): 1,345,600
- Article-level data (for SmartLinks and TOC Browse): 23,087,000

"The Knowledge base, managed by EBSCO, is global to all LinkSource and A-to-Z customers. 2.95 million links (with coverage) managed at the title level. 1.35 million links at the issue level, 23.1 million links at the article level."

### ***Quality of bibliographic data***

"we have steps in our data management processes to review and approve each holdings list loaded; as well as proactive reviews of various lists; and our sample of coverage quality of databases has shown that our data quality matches or surpasses that of competitive products."

### ***Frequency of Update***

"Continuously." Knowledge base changes are made continually and are not held and loaded in periodic batches.

### ***In-flow of Resources***

"EBSCO's is continually loading updated vendor title lists. Automated processes discover updated title lists retrieves for loading. Each list is loaded and verified by automated processes and must be reviewed and approved by EBSCO staff prior to the contents of that list from updating the global knowledge base --staff will verify title adds and deletes from vendor products."

### ***How are errors and omissions reported by libraries incorporated?***

"If a customer discovers an error or omission in the knowledge base they are encouraged to report this to the Customer Satisfaction team via email or phone. Each case is logged in our CRM system and a service issue generated and assigned to the content team. The content team researches the issue and makes any necessary changes. As the service issues are closed, the Customer Satisfaction team are alerted to follow-up with the customer and notify them that the fix has been made."

### ***Time until confirmed errors are corrected***

“Most content-related issues are resolved within 24 hours. Once the error has been confirmed and the content team updates the global knowledge base, all customer collections are updated within minutes.”

### ***Number of FTE allocated to KB development and quality assurance***

EBSCO reported 29 FTE involved with the maintenance of the EBSCOhost Integrated KnowledgeBase.

### ***Relations with content providers***

EBSCO has a robust set of relationships with other publishers and content providers through its role as one of the major forces in the e-resource publishing industry. “EBSCO works with individual content providers to secure feeds of their product title lists as well as their linking syntaxes. Where possible we encourage these content providers to use KBART guidelines for their lists.”

### ***Global targets***

There are currently 350 Link targets for LinkSource

### ***Global Sources***

Any source that generates a compliant OpenURL

### ***Subject Areas Covered***

EBSCO provides a detailed breakdown of subject coverage for journal content as follows:

- 20%-Social Sciences;
- 17%-Medicine;
- 15%-Science;
- 12%-Technology;
- 5%-Law;
- 4%-Language and Literature;
- 4%-Education;
- 4%-General Works;
- 4%-History;
- 3%-Philosophy, Psychology, Religion;
- 3%-Geography, Anthropology, Recreation;
- 3%-Agriculture;
- 2%-Political Science;
- 1%-Fine Arts;
- 1%-Music;
- 1%-Military Science. Naval Science

### ***Organization of Packages and Collections***

“The knowledge base is structured relationally. Title level details are maintained in one table and are assigned to a given database or package which in turn is attributed to a vendor/provider. One set of bibliographic data is maintained for a title with coverage and link information managed for each title-package assignment (a title within a package). The structure supports multiple coverage ranges for a

title-package assignment. Link targets for LinkSource can be assigned to a vendor, a package or an individual title within a package as appropriate -- link targets assigned to a vendor will be inherited by all packages and titles assigned to those packages."

#### ***Non-English material covered in the knowledge base***

No statistics available

#### ***Localization:***

"Most customers have no problem customizing the LinkSource menu and options. Web based training and customer support are available at no additional charge to assist customers with customization. The A-to-Z list supports many languages and configuration is as simple as selecting languages from a drop-down."

#### ***Process for localizing KB***

"A library can configure their collection using tools within the Admin module to select packages and individual titles. For e-journal and e-package subscriptions acquired through EBSCO, the system can automatically update these holdings -- including coverage details. Likewise a customer's EBSCOhost databases and eBooks on EBSCOhost (formerly netLibrary) holdings can be automatically synchronized. Customers can also upload title lists to activate global resources or add their custom titles and packages. All changes to the customer's collection made via the admin module or via upload are available to end users almost instantly."

#### ***Handling of local content not present in knowledge base***

"Customer can manage their collection by selecting from the Global Knowledge base and customizing holdings as required. Additionally, customers can add custom titles and custom packages to add resources not part of the global knowledge base -- such as special resources offered by the customer or the customer's print holdings."

#### ***E-Book Support***

Over 677,000 e-books are represented in the LinkSource knowledge base. The service also includes automatic updating of the library's e-books holdings in EBSCOhost with A-to-Z and LinkSource.

#### ***Link Syntax Management***

"Menu driven where customer can edit standard templates provided by EBSCO. Full text target links are automatically configured for holding in the knowledge base."

#### ***Peer reviewed material***

"We now have over 16,000 journals in the knowledge base flagged as "Peer Review". Note that we do not take the content provider's word on whether something is Peer Reviewed or not, we only flag titles that meet our criteria (this is the same criteria used for the EBSCOhost database limiters and evaluations."

#### ***Documentation of content***

"Lists of vendors and packages currently in the knowledge base can be supplied to prospective customers on request. Customers can view the entire contents of the knowledge base from within the

administrative module. Note that EBSCO's policy is that we will add any commercially or openly available resource to the knowledge base; therefore, prospective customers generally do not need to review coverage since EBSCO will cover virtually their entire collection."

### ***Common problem cases***

Multiple ISSNs per title: "Yes, the knowledge base structure supports print ISSN, online ISSNs as well as variant ISSNs to handle regional differences. This provides LinkSource with the level of forgiveness needed by a link resolver to handle variations in OpenURLs from different sources." Variant titles: "The knowledge base structure supports the assignment of multiple variant titles, including abbreviated titles to a given title. These titles are used during searching and look-ups and add a level of forgiveness to the systems."

Generation of MARC records from the knowledge base. "EBSCO offers a MARC Updates service that will provide MARC records for a customer's online collection. Full MARC records from Library of Congress are supplied where possible -- standard brief records are included when no matching LC record is found."

## **Compatibility and Integration**

### ***Relationship between KB and vendor's own discovery solutions.***

"Customer holdings for the A-to-Z/LinkSource product are used to automatically generate the "in my library"/"local holdings" limiter in the EBSCO Discovery Service and EBSCOhost."

### ***Relationship between KB and vendor's own ERM solutions***

"ERM Essentials operates from the same knowledge base and the same customer collection. Changes to the customer collection can be made from either ERM Essentials or the A-to-Z administrative module."

### ***Compatibility with external link resolvers, ERMS products, and discovery services***

No dynamic interaction, such as through APIs. "Holdings files can be exported and used to update other non-EBSCO knowledge bases."

### ***APIs and integration options***

"No APIs are available at this time."

### ***Options for Exporting Data***

As noted for interoperability with external products: "holdings files can be exported and used to update other non-EBSCO knowledge bases."

### ***Generation of MARC records from the Knowledge Base***

EBSCO offers the EBSCO MARC Updates service that generates MARC records that can be loaded into its local ILS based on e-journal holdings represented in its EBSCO A-to-Z profile.

### ***Use of CONSER records***

“CONSER records obtained from Library of Congress are used in the MARC Updates Service. The content team also uses MARC data as a resource when maintaining bibliographic element for titles in the knowledge base.”

### **Standards and Best Practices**

#### ***KBART Endorsement and Standards***

EBSCO is a member of KBART Phase I and Phase II Workgroups and has endorsed the KBART recommendations.

OpenURL Source: OpenURL 0.1; OpenURL 1.0 SAP 1

OpenURL – Target: Any target syntax, including those using proprietary title or product codes.

Supports ISBN, eISSN, ISSN, DOI.

### **Features and Functionality of the Link Resolver (LinkSource)**

#### ***Customization options***

“Can customize LinkSource service interface to match Web site.”

#### ***Custom service options***

“customer can select from a wide variety of non-full text target links or create their own. Links can be grouped within customer-provided sections.”

#### ***Control order of service or link presentation***

“customer can rank links”

#### ***Alphabetical lists of resources?***

Functionality to present alphabetical lists of resources is provided through the optional EBSCO A-Z product.

#### ***Direct linking***

Transparent linking to full text in unambiguous contexts. “The customer can also include a banner at the top of the target link to serve both as a way to promote that the content is being provided via the library, and as a means to allow the user to “click for more options” and return to the full link menu should the current link not be what they desired.”

#### ***Handling of Physical holdings***

“Customers can facilitate access to physical holdings (print collection), by including target links to the library catalog, to an ILL form or a document delivery form.”

#### ***Document Ordering and Interlibrary Loan Request***

“Target links to all commercial document delivery and ILL systems are supported.”

### ***Print on Demand***

“A library can create a link to any target desired. If they have a print-on-demand service which supports links that contain bibliographic data, then this is supported by LinkSource.”

### ***Link to ILS***

“Yes. Global link templates are available for all major ILS systems.”

### ***Reference Tools supported***

RefWorks, EndNote, Reference Manager, Zotero.

### ***Pricing and Availability***

#### ***Pricing***

Offered as an annual subscription, with the fee scaled according to the size of the institution's clientele measured in FTE.

#### ***Number of Implementations***

EBSCO has recently changed the product packaging such that LinkSource is a standard feature of A-to-Z. The number of active accounts for A-to-Z/LinkSource currently exceeds 3,000.

### ***Vendor Services***

#### ***Implementation***

“Set up of the account is automatic upon start of subscription. Target links are added automatically as the customer configures the collection. Web based training is offered at no additional charge. A support site is available 24 X 7 to provide key information, including details on activation of OpenURL Sources. The support site also includes examples on customization with copy-and-paste HTML for adding search boxes and find-a-citation links to the library's web site.”

#### ***Hosting***

Systems are hosted by EBSCO. There is no option for local installation of the services.

#### ***Platform Migrations***

EBSCO recent announced that LinkSource and A-Z platform will be integrated into EBSCO Discovery Service platform.

## **Serials Solutions: KnowledgeWorks and 360 Link**

Serials Solutions operates as a subsidiary of ProQuest, which is part of the Cambridge Information Group. ProQuest ranks as one of the major companies producing content products for libraries, and has continually expanded since its founding in the 1930's as University Microfilms through creating new product lines and through the acquisition of other companies. In 1999 the company changed its operating name from UMI to Bell and Howell Information and Learning; in 2001 the company was renamed to ProQuest. In 2004 ProQuest acquired Serials Solutions, which offers a variety of products related to the management, access, and discovery of library resources.

### **General Comments**

Serials Solutions deploys all of its major products as a multi-tenant software-as-a-service, where all sites share a single instance of the software and data components with no software installed locally. All management of the resources and access is delivered through Web-based interfaces. Libraries use the Client Center, a Web-based tool provided by Serials Solutions to configure and localize 360 Link to their specific holdings and customizations.

Serials Solutions traces its beginnings to the creation of lists and other resources to help libraries keep track of their e-journal holdings and has steadily expanded to include a wide array of products and services related to the access and management of electronic resources. In the last year the company has further expanded its scope with the launch of a new platform, called Intota, that will manage all aspects of a library's collection, including both print and electronic materials. The company was founded in 2000 by brothers Peter and Steve McCracken. Serials Solutions was acquired by ProQuest in July 2004. The company launched its link resolver, initially called Article Linker, now known as 360 link in 2003. From its inception, Serials Solutions has based its products on its core knowledge bases.

### **Knowledge base Characteristics**

This section provides details related to the KnowledgeWorks knowledge base that underlies 360 Link and other discovery, access, and resource management products offered by Serials Solutions.

#### ***Current Version***

KnowledgeWorks was launched as a distinct branded product in January 2008. Serials Solutions does not assign version or release designations to KnowledgeWorks or its suite of 360 products. A set of significant enhancements was announced in October 2010 that included a new administration console, new bibliographic citation management options, extended language support, and other features.

#### ***Configuration and Administration***

Profiling of the library's holdings relative to KnowledgeWorks and for 360 Link is accomplished through the administrative tools available through the Serials Solutions Client Center portal.

"Service-specific customization options may be configured by libraries in the Client Center."

Libraries can customize the content and functionality of the e-Journal portal to reflect specific branding.

Libraries can add custom notes to resources at the holding, database, and journal levels to keep patrons informed of special access requirements, as well as add custom URLs, proxies, database names, coverage dates, and more to ensure data reflects local needs. 360 MARC Update service also allows a library many MARC record customizations. This is not a complete listing of all customizations across our services and solutions.

### ***Content and Coverage***

Serials Solutions publishes the following numbers that describe the quantity of data represented in KnowledgeWorks:

- 1.8 million Journal Holdings
- 5.7 million e-Book Holdings
- 18,000+ Databases
- 7,000+ Full Text Databases

Serials Solutions reports: "We have detailed metadata for more than 7000 databases. We collect title lists from providers (or they push them to us), and upload changes on typically a monthly basis (some outliers are every other week, quarterly, or annually)."

Regarding the international coverage of the KnowledgeWorks reports

- Over 1,000 Non-US databases
- Content from 41 countries represented
  - 136 Germany
  - 110 The Netherlands
  - 98 United Kingdom
  - 63 China
- 10 language experts on staff

### ***Quality of bibliographic data***

"Serials Solutions uses automated processes to improve data as it enters KnowledgeWorks. This process involves establishing rule statements that act on the data to fix specific categories of errors known to exist in incoming data sets. Previous experience with data submissions from each provider informs the creation of these rules to apply corrections automatically in subsequent transfers. Serials Solutions reports that they have created over 100,000 of these rule statements and that they create approximately 200 new rules monthly. The corrected data are normalized from the form submitted into a standard format as they enter KnowledgeWorks. In addition to the automated processes, Serials Solutions personnel are involved with quality assurance and knowledge base corrections."

### ***Frequency of Updates***

"Most databases are updated monthly with outliers at every other week, quarterly, and annually. Client- or provider-reported changes that require immediate attention are not constrained by these standard update cycles."

### *In-flow of Resources*

“One of the key ways we clean up data as it's entering KnowledgeWorks is the use of rules which automatically and consistently correct holdings, resolving specific errors and inconsistencies, publication history (title splits we've identified, for example), and database-specific rules correcting vendor reporting issues. Rules are codified for provider and database. We have approximately 100,000 rules which are applied to thousands of databases. We create on average about 200 new rules each month as recurring data issues are identified. Some examples of rules are included on the example tab. We also review data during the ingestion process by reviewing spreadsheets, configuration tools that pull the content to the step prior to ingestion, and during the loading itself. During the ingestion process, titles that change are highlighted for review. In addition, we have the KnowledgeWorks Certification program (sun setting due to encouraging industry adoption of KBART), and the KBART working group endorsement described more in detail below. We also work directly with providers in best case scenario so that our data is vetted by the providers themselves, through title lists provided directly from them. Keeping a working relationship with as many providers as possible allows us to make sure that our data remains accurate, and allows us to resolve data problems quickly as they arise.”

### *How are errors and omissions reported by libraries incorporated?*

“We do regular updates, many of these errors and omissions are caught in that process. Where they aren't, we verify errors and omissions with the providers and make changes as validated.”

### *Time until confirmed errors are corrected*

“Contingent on provider validation.”

### *Number of FTE allocated to KB development and quality assurance*

Serials Solutions allocates 12 FTE to the development and quality assurance of KnowledgeWorks.

Serials Solutions also reports: “Three cataloging metadata librarians overseeing the match of provider title list data to CONSER and other authority data. They are CONSER members and represent Serials Solutions at CONSER operations meetings as well.”

### *Relations with content providers*

“KnowledgeWorks Certified is a publisher certification program that recognizes content providers who partner with Serials Solutions to provide the KnowledgeWorks knowledgebase with the highest quality metadata for eBooks and e-journals. Certified providers establish a direct relationship with the Serials Solutions content collection team, support timely electronic updates, and complete a data verification cycle. This collaboration enhances the timeliness and quality of the certified provider's metadata within KnowledgeWorks and enables us to deliver the most reliable tools for e-resource access and management to the library. Serials Solutions is and has been an active participant on the Knowledge Base And Related Tools (KBART) Working Group. As a result, we are recommending providers get endorsed by KBART which is an industry recognized standard that meets the qualifications that we also endorsed for our original certification program. Regardless of whether providers opt to become certified or endorsed, we work with all of them to accomplish the same goals.”

### ***Subject Areas covered***

No specific statistics available, but Serials Solutions reports that the knowledge base covers a broad range of topics and is not oriented toward any given segment of the e-resource arena. Many databases are interdisciplinary. Serials Solutions adds, “The Client Center provides tools for evaluating e-resource collections, and libraries can select various subject classifications (e.g., HILCC, MeSH) that will display with their library's A-Z list holdings.”

### ***Non-English material covered in in the knowledge base***

Serials Solutions reports that approximately 20 percent of the content tracked in KnowledgeWorks is in languages other than English.

### ***Local Extensibility***

#### ***Process for Localizing the Knowledge Base***

“Through the Client Center libraries have the ability to customize the standard (default) coverage information tracked in KnowledgeWorks, to configure their library-specific linking options, add resource and public notes, and further customize their holdings information. Changes to KnowledgeWorks do not override client customizations. As noted previously, libraries may also add their own databases/collections of library-specific or non-electronic holdings so that those materials are available to library staff in Serials Solutions collection management services and to end users in our Discovery services. Language localizations for the 360 services are also available in the Client Center so that localized content and other resource information is properly displayed to end users.”

#### ***Handling of local content not present in the Knowledge Base***

“New databases or collections can be added through the Client Center. Used by many libraries that want to track non-electronic materials.”

#### ***E-Book Support***

E-books are included in the KnowlegeWorks. “Title-level and chapter-level linking. Normalization of provider holdings to LC/CONSER, NLM, other MARC records.”

#### ***E-Book Chapter-level metadata***

“Yes, chapter level linking has been released. Not broadly supported by provider platforms at this point, but we expect to see adoption and growth in this area.”

#### ***Link Syntax Management***

Link Syntax is largely managed by Serials Solutions. “We manage title, article, and chapter-level linking on our end through standard linking syntaxes (predominately OpenURL) at various levels that provide users with the quickest and most reliable path to locate and access the appropriate full-text content. Some libraries require customized versions of standard linking syntaxes, or specific proxy information to be included so their links work with a provider and this is handled by libraries in the Client Center.”

#### ***Peer-reviewed content***

Serials Solutions does not current provide tools that identify which materials are peer-reviewed. No specific statistics available on what percentage of materials are peer-reviewed. Serials Solutions

mentions: “360 service subscribers that are also Ulrichsweb service subscribers can identify peer-reviewed titles across those services through our APIs. The integration of KnowledgeWorks and Ulrich's data is central to our 2012-2013 plan for KnowledgeWorks development in support of Intota and the additional content types that we have begun to track for Summon service subscribers.”

### ***Documentation of content***

“We maintain a central Support Center with detailed documentation for all of the Serials Solutions services. Documentation includes user guides, recorded video and audio tutorials, and other material. Changes to KnowledgeWorks are also reported in the Support Center. For provider databases with substantial changes or linking issues (such as platform migrations), we provide explanatory help files and documentation. We also provide a list of new providers and databases on a monthly basis.”

### ***Common Problem Cases***

Can manage multiple ISSNs per title: Using normalization and rules, we are able to associate provider holding titles with an authority title that recognizes multiple ISSNs, including eISSN.

Handling of variant titles: Using normalization and rules, we identify and merge variant titles into a single record.

### ***Compatibility and Integration***

KnowledgeWorks stands as a key component for almost all of Serials Solutions products related to discovery and resource management.

Serials Solutions does offer API's for its discovery services, Summon and AquaBrowser, which can be used indirectly to access data from KnowledgeWorks: “Documented APIs are available for all of the Serials Solutions Discovery services that allow users to integrate their library-specific holdings information into the library's local services. Through the Client Center, clients may create a file of their holdings for certain authorized uses outside of the 360 services.”

### ***Relationship between KB and vendor's own discovery solutions***

“Serials Solutions services are based on a Software as a Service (SaaS) model, so 360 Core, 360 Link, 360 Search, AquaBrowser and the Summon service all use the KnowledgeWorks knowledgebase. Authoritative database and title information is centrally maintained in KnowledgeWorks and shared across the services. Client profile data, including service-specific customizations and rights/entitlements data (to determine what full-text can be displayed) are applied at the service level. When KnowledgeWorks is updated, the updated metadata appears in all of the services simultaneously.”

### ***Relationship between KB and vendor's own ERM solutions.***

“Since Serials Solutions services are based on a Software as a Service (SaaS) model, KnowledgeWorks supplies authoritative bibliographic metadata to all of our electronic resource management tools. Client profile data, including service-specific customizations and rights/entitlements data (to determine what full-text can be displayed) are applied at the service level. When KnowledgeWorks is updated, the updated metadata appears in all of the services simultaneously.”

### ***Compatibility with external link resolvers, ERMS products, and discovery services***

“There is no API to KnowledgeWorks, although an API is a component of the 2012-2013 KnowledgeWorks development roadmap. Currently through the Client Center, clients who use a link resolver other than 360 Link may create a file of their holdings for certain authorized uses outside of the 360 services.”

### ***APIs and integration options***

Serials Solutions offers a complete API to its 360 Link application, which provides access to the data and services related to the underlying KnowledgeWorks resource. “There is no API to KnowledgeWorks, although an API is a component of the 2012-2013 KnowledgeWorks development roadmap. Documented APIs are available for all of the Serials Solutions Discovery services that allow users to integrate their library-specific holdings information into the library's local services.”

### ***Options for exporting data***

“Documented APIs are available for all of the Serials Solutions Discovery services that allow users to integrate their library-specific holdings information into the library's local services. Through the Client Center, clients may create a file of their holdings for certain authorized uses outside of the 360 services.”

### ***Generation of MARC records from the knowledge base.***

“Serials Solutions' 360 MARC Updates service combines the holdings information we maintain for our clients with the bibliographic information about these holdings from MARC records. We combine the bibliographic record we get from Library of Congress or other sources (e.g., CONSER, Books English, National Library of Medicine, in-house cataloging, etc.) with our holdings information for each title and customize this authority data into a MARC record based on a library's requirements. MARC records are delivered to the library, including a hosted 856 link that takes end users to a result page which lists all of the holdings subscribed to by the library for that title, along with holdings dates, database name, and URLs to each. We can also generate Serials Solutions brief (neutral) MARC records with stable identifiers that libraries can load prior to the availability of a full replacement record or a holdings information change. We use title and ISSN/ISBN matched to available provider holdings information to generate this brief record. Libraries are able to customize this service substantially to support their local requirements.”

### ***Use of CONSER records***

For MARC records, we provide Library of Congress, CONSER, National Library of Medicine, Bowker, and various other provider records. MARC is our authority source as it follows multiple library preferred standards for the display of bibliographic data. We use CONSER MARC records as part of the 360 MARC Update service. We also use these records to enhance provider data as we can make matches to provide libraries with data in the way they prefer, rather than the home grown, occasionally haphazard way that data comes in from providers. We call the latter process Normalization.

## **Standards and Best Practices**

### ***KBART Endorsement and Standards***

Serials Solutions was a member of KBART Phase I Workgroup, is participating in Phase II and has endorsed the KBART recommendations. The company is transitioning its KnowledgeWorks Certification Program that it established to engender consistent and compete data submission from publishers to KBART compliance.

Serials Solutions makes use of other applicable standards, including OpenURL (0.1 and 1.0), ISBN, ISSN, DOI.

### **Features and Functionality of the Link Resolver (360 Link)**

#### ***Customization options:***

“Service-specific customization options may be configured by libraries in the Client Center.”

#### ***Custom service options***

“Libraries can customize the content and functionality of the e-Journal portal to reflect specific branding.”

#### ***Control order of service or link presentation***

No Response

#### ***Alphabetical lists of resources?***

“The 360 Core service that is a part of every 360 service subscription provides an alphabetical E-Resource Portal that lists the library's electronic resources. A subscription to 360 Link is not required in order for a library to use E-Resource Portal functionality.”

### **Features and Functionality of the Link Resolver (360 Link)**

#### ***Customization process and options***

“You can add custom notes to resources at the holding, database, and journal levels to keep patrons informed of special access requirements, as well as add custom URLs, proxies, database names, coverage dates, and more to ensure data reflects local needs. 360 MARC Update service also allows a library many MARC record customizations. This is not a complete listing of all customizations across our services and solutions.

You can customize the content and functionality of the e-Journal portal to reflect specific branding.”

#### ***A-Z listings***

This capability is part of the 360 Core product, an underlying component of 360 Link. “360 Core service that is a part of every 360 service subscription provides an alphabetical E-Resource Portal that lists the library's electronic resources. A subscription to 360 Link is not required in order for a library to use E-Resource Portal functionality.”

### ***Link to full text***

Link resolver customization options in the Client Center let libraries decide whether to display the interim link resolver screen to end users or to bypass it.

### ***Direct linking***

Transparent link to full text in unambiguous contexts: "Link resolver customization options in the Client Center let libraries decide whether to display the interim link resolver screen to end users or to bypass it."

Prioritized listing of publishers and services: "Link resolver customization options in the Client Center let libraries include links to their preferred document suppliers from the 360 Link results page so that end users can request articles not found in the library's collection."

Document Ordering: "Link resolver customization options in the Client Center let libraries include links to their preferred document suppliers from the 360 Link results page so that end users can request articles not found in the library's collection."

Inter-library loan: "Link resolver customization options in the Client Center let libraries include links to their preferred ILL form/service from the 360 Link results page so that end users can request articles not found in the library's collection. Alternately, libraries may specific an email address for an ILL librarian or other recipient of ILL requests."

### ***Handling of Physical holdings***

"Clients have the option to add their own "databases"/collections to the titles tracked in KnowledgeWorks through the Client Center. This is particularly useful to clients who wish to include non-electronic resources in their 360 services or to create library-specific content for discovery by their end users."

### ***Document Ordering***

"Link resolver customization options in the Client Center let libraries include links to their preferred document suppliers from the 360 Link results page so that end users can request articles not found in the library's collection."

### ***Print on Demand***

"A variety of 360 Link custom links are available to clients and can be customized in the Client Center."

### ***Interlibrary Loan Request***

"Link resolver customization options in the Client Center let libraries include links to their preferred ILL form/service from the 360 Link results page so that end users can request articles not found in the library's collection. Alternately, libraries may specific an email address for an ILL librarian or other recipient of ILL requests."

### ***Service to search WorldCat***

"Yes, through custom links in 360 Link."

### *Service to search OAIster or other open access targets*

“Yes, through custom links in 360 Link.”

### *Link to the ILS*

“As we provide hosted services, we don't tie into ILSs.”

### *Reference tools supported*

RefWorks, EndNote, and Reference Manager.

## **Pricing and Availability**

### *Pricing model*

360 Link is offered through an annual subscription, with the cost scaled to the size of the library.

### *Option to license KB separate from the link resolver*

360 Link cannot be licensed without the KnowledgeWorks.

### *Numbers of installations*

Serials Solutions reported 974 installations of 360 Link for the 2011 Library Journal Automation Marketplace survey. The company has additional installations that rely on KnowledgeWorks:

- 360 Link: 973, with 328 in libraries outside of the United States
- 360 Core: 621
- 360 MARC OPAC Updating Service: 444
- 360 Resource Manager: 273
- 360 Search: 479 (202 outside the United States)
- 360 COUNTER: 256

## **Vendor Services, Products, and Future Directions**

### *Implementation services*

“No on-site implementation or work by the library is required. Clients who prefer to have Serials Solutions customize aspects of their services for them (e.g., setting up custom links, customizing the look and feel of a service using library branding) are supported by our Global Client Services support team.”

### *Hosting*

Serials Solutions services are built on a true Software as a Service (SaaS) model.

### *Related Products*

Serials Solutions and its parent company ProQuest offer a wide variety of products related to the management, access, and discovery of library resources.

### *Technology infrastructure*

KnowledgeWorks is managed in Microsoft SQL Server.

### ***Future Development Plans***

“Intota is not a KnowledgeWorks replacement or enhancement. It is a separate product that will, like all our products, rely on the content data maintained in KnowledgeWorks.”

“The new Knowledge Base is not part of Intota, but Intota relies on the new Knowledge Base. The new KB will include meta data beyond ejournals and ebooks, extending to other forms of electronic and digital content as well as print. This allows Intota cusotmers to manage their entire collection, regardless of format, using a consistent set of workflows.”

## OCLC WorldCat knowledge base

### General Comments

OCLC operates as a global non-profit cooperative founded in 1867 that provides a wide array of services to its members and customers throughout the world. Its original activities were based on cataloging and other bibliographic services, which have steadily expanded to include interlibrary loan and other resource sharing services, collection analysis, digital asset management products, and end-user discovery services. OCLC has made a variety of strategic acquisitions of other organizations that provide bibliographic services and companies that produce library automation systems. Since 2009 OCLC has been developing its own library management services, currently known as the WorldShare Management Services and WorldCat License Manager, which operate on the company's new infrastructure, the WorldShare Platform.

OCLC became involved OpenURL link resolvers and knowledge bases when it acquired Openly Informatics, which offered the 1Cate link resolver in January 2006. Openly Informatics was founded in June 1998 by Dr. Eric Hellman. Following the acquisition of Openly Informatics, the 1Cate link resolver and its knowledge base became the basis for OCLC's WorldCat Link Manager, which was offered as a stand-alone link resolver.

OCLC has recently discontinued the WorldCat Link Manager product. WorldShare License Manager subsumes this functionality within its broad scope of electronic resource management. The WorldCat Local discovery service includes an OpenURL link resolution service based on the library's holdings set in WorldCat. OCLC offers OpenURL link resolution as part of WorldCat Local without additional costs, including an A-Z listing service for electronic resources. Libraries that previously licensed the WorldCat Link Manager have mostly migrated to new products, some to WorldShare License Manager and others to commercial products.

### General Description

WorldShare License Manager provides a suite of tools and services for the management of electronic resources. It includes a link resolution service and manages subscriptions, access policies, licenses, vendor, and rights management and relies on the WorldCat knowledge base.

OCLC offers the WorldCat knowledge base not as directly tied to any specific product, but as a data resource can be tapped by any of OCLC's current or future services. The WorldCat knowledge base currently drives the OpenURL link resolution within WorldCat Local and the recently announced WorldShare License Manager.

Within the confines of WorldCat Local, links can be resolved entirely behind the scenes without the need to present users with a menu to invoke a link resolver.

### Knowledge base Characteristics

This section provides related to the OCLC WorldCat knowledge base

### ***Current Versions***

OCLC does not assign specific version or release designations to its knowledge base or to the link resolution capability built into WorldCat.

### ***Configuration and Administration***

“All resolver instances/organizations receive their own account in the WorldCat knowledge base, allowing them to maintain their own set of knowledge base holdings. Each also receive their own (configurable) baseURL to the OpenURL link resolver. All local administrators have full control of their local content.”

### ***Content and Coverage***

The WorldCat Knowledge Base includes three categories of data. Collections data describes the databases and content packages available to libraries for subscription. Title data provides the identifiers and descriptive metadata regarding all of the titles associated with collections. Holdings data records the library’s inventory of subscriptions. The WorldCat knowledge base also manages the linking logic required to create links to full text and other services.

OCLC provides the following statistics that characterize WorldCat knowledge base

- 138 providers, 2,433 tables, 1,738 full-text tables.
- 9,732,597 records, 1,033,482 full-text records
- 4,161,006 records for free content
- 7,805,498 eBook records

### ***Quality of bibliographic data***

Records in WorldCat are maintained cooperatively by catalogers and other information professionals, adhere to international standards, and are vetted by several OCLC and industry quality control programs. Libraries that contribute information to WorldCat are bound by the WorldCat Principles of Cooperation and follow particular guidelines regarding content. OCLC online cataloging service Connexion integrates full record validation with detailed error messaging to assist with entering new data into WorldCat.

### ***Frequency of Update***

“The WorldCat knowledge base data is updated on a monthly basis. Customer requests and changes are accepted and prioritized for inclusion in future releases.”

### ***In-flow of Resources***

OCLC works with Pubget to create an automated process for loading data into the WorldCat knowledge base. Pubget’s primary product is a search engine for finding scientific papers. OCLC has partnered with Pubget to use their proprietary technology to retrieve holdings for each of the library’s subscriptions. By providing the usernames and passwords for each of their subscribed resources, Pubget is able to automatically harvest all of the holdings available and record them in the WorldCat knowledge base. Where other methods rely on descriptions provided by content providers of what is expected to fall within a package, Pubget harvests what is actually available.

OCLC reports that the WorldCat knowledge base is fully regenerated every month. "The WorldCat knowledge base data is gathered in full (over 9 million records) each month. This is done by obtaining feeds from content providers or by direct download out of the platform being tracked. All data across all providers is normalized and cleaned up before being deployed into the live system."

Pubget, founded in 2007, was acquired by the Copyright Clearance Center in January 2012.

#### ***How are errors and omissions reported by libraries incorporated?***

"Libraries can choose to report problems to OCLC and those will be prioritized and fixed in a future monthly data update. Alternatively the library may correct their own records or contribute their own collections/records to fill any gaps that may appear in the global knowledge base."

#### ***Time until confirmed errors are corrected***

"Errors in the global knowledge base are fixed in a monthly update within 1-2 months depending on when the error is reported."

#### ***Number of FTE allocated to KB development and quality assurance***

OCLC allocates 8 FTE to the development and quality assurance of its knowledgebase.

#### ***Relations with content providers***

No response

#### ***Subject Areas covered***

No specific statistics available. "The WorldCat knowledge base does not track subject based classifications for journals."

#### ***Non-English material covered in the knowledge base***

No specific statistics available. "Non-English content is treated similarly to English content. The data is gathered from a wide range of content suppliers and normalized into the WorldCat knowledge base data set."

#### ***Localization***

"The library is given total control over the holdings in their own WorldCat knowledge base. This includes the ability to alter many fields of a record including the title and standard identifier as well as coverage information to satisfy their own needs should the global version of a record not be sufficient."

#### ***Relationship between global knowledge base and local content***

"The global knowledge base is supported by OCLC and gathered from over 130 different major content providers as well as thousands of minor publisher platforms. The global knowledge base is used to make management of holdings for common collections very efficient and easy. Each library has full control over their local knowledge base, however. The library may choose to customize or correct global knowledge base collections for use in their own holdings. Additionally any library may contribute their own collections into their local knowledge base to ensure complete coverage of their subscribed electronic content."

### ***Process for localizing KB***

The library is given total control over the holdings in their own WorldCat knowledge base. This includes the ability to alter many fields of a record including the title and standard identifier as well as coverage information to satisfy their own needs should the global version of a record not be sufficient.

### ***Handling of local content not present in knowledge base***

#### ***E-Book Support***

E-books are included in the OCLC WorldCat knowledge base

#### ***E-Book Chapter-level metadata***

Chapter-level metadata is provided.

### ***Link Syntax Management***

"Link Syntax is largely managed as one component of the WorldCat knowledge base. "The link resolver is based on the latest link resolver technology as well as experience with historical link resolver trends."

### ***Peer reviewed material***

No specific statistics available. "There is no peer review indicator in the WorldCat knowledge base at this time. When the data is used in conjunction with WorldCat Local, the peer review status of articles/journals is displayed (and results can be filtered to just those) because of the features/functionality of WorldCat Local."

### ***Documentation of content***

No details provided

### ***Common problem cases***

Can manage multiple ISSNs per title: Both an ISSN and eISSN value are supported for each journal record

Handling of variant titles: This is planned as a future enhancement. At this time, the WorldCat knowledge base supports only the title that is listed on the content provider's platform. The title is editable by a library if there is a preferred version, but there is only one title value.

### ***Compatibility and Integration***

#### ***Relationship between KB and Vender's own discovery solutions***

"WorldCat knowledge base functionality is integrated into WorldCat Local. Provided at no additional charge to WorldCat Local, this functionality enables libraries to better manage the workflows associated with electronic materials; for example:

- A-Z Listing: WorldCat Local users can browse a library's collections with an integrated A-Z listing of available e-journals, made possible by the WorldCat knowledge base.
- Link to Full Text: By synchronizing subscriptions in the Open URL Resolver with the WorldCat knowledge base, the brief results can provide one-click access to full text for users."

### ***Relationship with ERM solutions***

"OCLC's WorldShare License Manager supports the complete lifecycle of an e-product from acquisition, purchasing, and payment, through licensing and implementation. WorldCat knowledge base serves a central role with the License Manager, providing functionality integrated into WorldCat that enables access to an institution's content. License Manager includes API/Service access to the knowledge base."

### ***Compatibility and Integration***

OCLC offers an API for the WorldCat knowledge base that allows libraries and other third parties to create their own application or services.

### ***APIs and integration options***

"License Manager includes API/Service access to the knowledge base. The APIs made available to libraries and partners are the same as the APIs in use by internal products using WorldCat knowledge base data."

### ***Options for exporting data***

"License Manager is a vendor-neutral service that interoperates across library management systems, allowing for KBART-formatted exports of profiled knowledge bases for integration with other library management systems."

### ***Generation of MARC records from the knowledge base***

"There is a pilot project starting in March 2012 to deliver WorldCat bibliographic (MARC) records to libraries based on their WorldCat knowledge base selections. The MARC records themselves are supplied out of WorldCat with standard editing options and the 856 fields are replaced with WorldCat knowledge base links. The WorldCat knowledge base data is not used to generate new MARC records, only to match to the high-quality WorldCat records."

### ***Use of CONSER records***

CONSER records are available in WorldCat

## **Standards and Best Practices**

### ***KBART Endorsement and Standards***

Member of KBART Phase I and Phase II Workgroup; Endorsed KBART recommendations

"The data sources supported are both KBART and non-KBART compliant content providers. The WorldCat knowledge base platform, where institutions manage their holdings, also support KBART uploading and downloading."

OCLC supports OpenURL target and source, and other related standards and identifiers.

### ***Features and Functionality of the Link Resolver (WorldCat Local link resolution)***

OCLC provides a link resolution service with WorldCat Local, but has discontinued offering a stand-alone link resolver product.

Since OCLC currently focuses on providing native link resolution through WorldCat Local rather than offering a stand-alone link resolver, many of the features pertaining to these category do not apply.

#### ***Customization options***

Not applicable.

#### ***Custom service options***

The library can use its own banner and branding in WorldCat Local, including link resolution services.

#### ***Control order of service or link presentation***

The library can control the order in which links or service are presented.

#### ***Alphabetical lists of resources?***

“The A to Z API is available alongside the knowledge base search API. The A to Z API is based on the AtomPub model with extensions to support normal sorting/searching operations expected in an A to Z user interface.”

#### ***Link to full text***

“By synchronizing subscriptions in the Open URL Resolver with the WorldCat knowledge base, the brief results can provide one-click access to full text for users.”

#### ***Direct linking***

transparent link to full text in unambiguous contexts. “Citation data and your institution's affiliation are combined with linking logic defined by the knowledge base to create a link to the full text at the article or title level.”

#### ***Number of libraries using WorldCat knowledge base***

OCLC reported 301 libraries actively using the WorldCat knowledge base.

#### ***Handling of physical holdings***

“The WorldCat knowledge base supports print holdings in all responses based on lists of print serials loaded into an institution's account.”

#### ***Document Ordering***

Offered as an implementation option.

#### ***Print on Demand***

“Print on demand is not supported at this time.”

#### ***Interlibrary Loan Request***

“Interlibrary loan requests can be initiated from within the link resolver when no holdings are found to match the source citation.”

#### ***Service to search WorldCat***

“The link resolver is integrated into the WorldCat Local infrastructure. WorldCat can be easily searched using normal WorldCat Local functionality.”

### ***Service to search OAIster or other open access targets***

“OAIster and other open access targets are included in WorldCat.”

### ***Link to the ILS***

“For print materials a link to any system can be included with the record. The library can choose the location that their links should go to.”

### ***Reference tools supported***

RefWorks, EndNote, Reference Manager.

### ***Pricing and Availability***

#### ***Pricing model***

“Access to the WorldCat knowledge base is included in the cost of OCLC Cataloging subscription. The License Manager and accompanying link resolver is available for an additional fee.”

#### ***Numbers of Installations***

No specific numbers available.

#### ***Option to license KB separate from the link resolver***

The WorldCat knowledge base can be used independently from the link resolver interface.

#### ***Option to license Link Resolver without KB***

The link resolver must be used with the WorldCat knowledge base.

### ***Vendor Services, Products, and Future Directions***

#### ***Implementation***

“An OCLC Implementation Manager works with library staff in completing the following implementation steps:

- Library staff provides information about their content providers. OCLC and its partner, Pubget, use the information in a pilot program to automate the addition and maintenance of the library's holdings data in the WorldCat knowledge base.
- Library staff verify their holdings data in the WorldCat knowledge base interface in OCLC Service Configuration and work with OCLC and Pubget to improve their holdings data as needed.
- Library staff add their library's license data in the WorldCat knowledge base interface.
- Library staff set up enhanced resource sharing of articles.”

#### ***Hosting***

“The WorldCat knowledge base is offered entirely as SaaS. Our central location in Dublin, Ohio, houses a fully staffed, 15,000 square-foot, raised-floor computer operations facility with an off-site backup facility in the case of a major system failure at the central location.”

OCLC has since opened a data center in the United Kingdom, with additional sites planned.

### ***Related Products***

OCLC offers a very wide variety of products and services related to the management, access, and discovery of library resources. The WorldShare Platform, which supports the WorldShare Management Services, WorldShare License Manager, and applications developed by third-party organizations, is positioned as the organization's strategic technology. WorldCat Local is OCLC's strategic discovery service for library patrons, which includes link resolution based on the WorldCat knowledge base.

### ***Technology infrastructure***

"MySQL and Find (internally developed indexing engine)"

### ***Future Development***

"The WorldCat knowledge base platform is completely new. The data in the service comes from the data harvesting process that was built by Openly Informatics and continues to be supported and enhanced by OCLC."

### ***Platform Migrations***

OCLC has deployed the initial version of its WorldShare Platform with significant enhancement in features and global distribution expected over the coming years.

## **TDNet Global KnowledgeBase**

TDNet, a company based in Israel, offers a suite of products related to electronic resource management or access. Products include the TOUResolver, Electronic Resource Management, an A-Z product, all reliant on the TDNet Global KnowledgeBase.

TDNet is a business activity of Teldan Information Systems. Teldon also offers subscription services, distributes information products in the area of science and technology, as well as the TDNet products for access and management of electronic resources.

TDNet did not respond to the questionnaire provided. Some general information regarding the company and its relevant products was gathered from its Web site and other sources.

The TDNet Knowledgebase includes:

- Metadata for 370,000 unique titles
- 24,000 publishers and aggregators
- 285,000 unique print and full-text journal titles
- 1,100 full text aggregated collections
- 13,500 open access titles

Material represented includes:

1. Journals (print and electronic)
2. Electronic tables of contents for 25,000 unique titles
3. eBooks: 180,000 titles (Separate module, supports TDNet eBook manager)
4. Databases and electronic collections
5. Data in support of ERM (Separate module for ERM that includes prices and other acquisitions data)

The TDNet Knowledgebase is populated from sources that include aggregators, publishers, and other vendors. Libraries can add their own private database holdings as needed for unique collections.

**Frequency of updates.** The Knowledgebase is updated daily as needed, with updates pushed to customer installations weekly.

## **WebBridge**

Innovative Interfaces, Inc. offers the WebBridge link resolver, primarily to libraries that use its Millennium ILS.

For the Library Journal Automation Marketplace 2011 survey, Innovative reported that 385 libraries have implemented WebBridge.

The WebBridge Link Resolver can make use of holdings data from third party knowledge bases, or the library can populate its own. Innovative Interfaces, Inc. does not maintain a global knowledge base on behalf of the libraries that use WebBridge.

Innovative offers a product called CASE (Content Access Service) that provides coverage data for WebBridge and Electronic Resource Management. The company reports that CASE is based on data licensed from OCLC from the WorldCat KnowledgeBase, so will not be discussed separately.

## **CUFTS (Open source project launched at Simon Fraser University)**

Simon Fraser University initiated the reSearcher product suite that involves the GODOF link resolver implemented as open source software and a CUFTS, a knowledge base created in an open access model. reSearcher formerly included a federated search utility dbWiz, but when the Simon Fraser University Library implemented Serials Solutions Summon in 2011, support for this product was withdrawn.

TrueSerials is a small commercial firm that offers services based on the GODOF/CUFTS suite.

GODOF/CUFTS has also been adopted by the PALS consortium in Minnesota as the basis for their PALSconnect Linker.

### ***Content and Coverage***

Compared to the commercial knowledge bases, CUFTS is relatively limited.

The CUFTS Open Knowledgebase currently contains around 475 resources. The knowledge base is managed by the Simon Fraser University Library, in collaboration with the community of libraries that also use the system.

12,336 journal titles were included in December 2011, the date of the last update.

**In-flow of Resources.** The management of the CUFTS knowledgebase is managed primarily through the Simon Fraser University Library. This project lacks the level of resources to perform the sophisticated pre-processing and manipulation of the incoming title lists in place for the commercial products.

Limitations exist in what packages can be maintained centrally through the CUFTS knowledge base and which the libraries must maintain individually. A recent news item on the researcher site indicated, for example “Because of changes in the way Elsevier is providing its data, it is no longer possible for us to maintain a master list for this resource in a form that will allow your local holdings to be retained.” Libraries with ScienceDirect would individually download their holdings from their Elsevier administrative account and import them into their instance of CUFTS.

**MARC Record export.** CUFTS includes a utility, cufts2marc, that creates basic MARC records, derived from the bibliographic data in the knowledge base. These are not CONSER or equivalent MARC records.

**Libraries using researcher:** A full list of the 43 libraries, consortia, and other organizations using researcher is provided:

<http://researcher.sfu.ca/partners>

The GODOF link resolver and CUFTS knowledge base are also offered through TrueSerials, a company that will provide service and support based on these open source and open access products.

## **OLinks**

OhioLink developed its own OpenURL link resolver called OLinks for its member libraries. Its knowledge base was populated primarily to represent the subscriptions of OhioLink.

OhioLink will discontinue OLinks by the Fall of 2012. All members of OhioLink currently use OLinks and will transition to other products.

## **Gold Rush**

Provided by the Colorado Alliance of Research Libraries, Gold Rush include several components, including A-Z listings, an OpenURL link resolver, electronic resource management, and a utility for comparing content among content packages.

Gold Rush can be considered a low-cost alternative with basic capabilities to the more full-featured, and significantly more expensive commercial products.

Information about Gold Rush was obtained through the project's Web site and from e-mail correspondence with the Executive Director of the Colorado Alliance of Research Libraries.

### ***Content and Coverage***

The Gold Rush knowledge base includes:

- Over 1,500 title lists, that includes aggregators, primary publishers, and indexing/abstracting services. A full list was provided.
- 57,000 unique full-text journals
- 119,000 journals including both full-text and indexed-only titles
- 15,000+ open access/free journals from about 100 different providers, half of which can be found in Directory of Open Access Journals alone

### ***Data tracked in knowledge base***

"The data included for each journal includes title, alternate titles, ISSN, EISSN, subjects, notes field, years of coverage, journal URLs, embargos, drop-off windows, indication if a title is Open Access, indication if a title is full-text or indexed-only. These elements are tied to publisher/vendor and databases."

### ***Subject Areas covered***

"knowledge base cuts across all subject disciplines"

### ***Reports available***

"All customers can run comparison reports between databases in our Reports module. These can be one-by-one comparisons, one-to-many, or many-to-many (e.g. I want compare 6 EBSCO databases with 8 Gale databases). Because we retain indexing-only journal titles, a popular comparison may be something like Scopus vs. Biological Abstracts; or something like if I get a suite of EBSCO aggregator databases can I get rid of certain niche indexing/abstracting services."

### ***Frequency of updates***

"Aggregator lists are loaded once a month. But primary publishers and indexing/abstracting services are loaded less frequently based on need. For example, a new title list for an indexing-only database might only be issued once a year."

### ***Non-English material***

“there are tens of thousands embedded in various title lists but we don’t tag them specially.”

### ***Libraries using Gold Rush***

The Gold Rush service currently has about 75 subscribers. Most of the academic libraries using Gold Rush are relatively small academic libraries, but subscribers also include some large public libraries such as Denver Public or Chicago Public. Not all these libraries use Gold Rush for the link resolver component. All subscribers are in the United States or Canada. For a full list, see:

<http://goldrush.coalliance.org/>

### ***Pricing and availability***

Gold Rush can be licensed in four basic packages:

- Gold Rush Reports – allows content comparisons between title lists (\$650/year)
- Gold Rush A-Z/Linker – includes Reports but also has an A-Z and link resolver service (\$2,000/year)
- Gold Rush ERM – includes Reports, A-Z and Subscription Management (but not a link resolver) (\$2,000/year)
- Gold Rush Complete – all of the above (\$4,000/year)

Licensing is flat and does not vary by the number of titles held or the library size. Discounts are available for consortial purchases. Free trials are available.

## Kuali OLE: Global Open KnowledgeBase

The Kuali OLE project aims to create a new generation enterprise level library automation platform for academic and research libraries through a community source development model. One of the key tenants of the Kuali OLE involves providing tools to manage all types of library resources, including print, digital, and electronic. Following a one-year planning project, Kuali OLE is currently involved in a two-year process to build the software, which is scheduled for completion of an initial version by the end of 2012.

A recently-added component of this project includes the creation of a knowledge base to support the management of electronic resources, called the Global Open KnowledgeBase, or GOKb. This new activity has received funding from the Andrew W. Mellon Foundation, which has approved a grant proposal for a project to be carried out between April 2012 and March 2013. The proposal, submitted to the Mellon Foundation on January 4, 2012, describes a collaborative engagement between the JISC and Kuali OLE, with North Carolina State University serving as the lead institution. Susan Nutter, Vice Provost and Director of Libraries Administration at NCSU and Rachel Bruce, Innovation Director, Digital Infrastructure for JISC serve as Principal Investigators for the GOKb project.

The GOKb project aims to create a community supported knowledge base that can be used by multiple projects for the management of electronic resources. While the resulting knowledge base will initially target the immediate needs of the JISC and Kuali OLE, the design and intellectual property arrangements will support other institutional and commercial uses. The data underlying GOKb will be made available under the Creative Commons 0 (CC0) public domain license, following the method described in the Science Commons Protocol for Implementing Open Access Data (<http://www.sciencecommons.org/projects/publishing/open-access-data-protocol/>). The technical infrastructure for the knowledge base will be created as open source software under the Educational Community License 2.0. The project will lead to initial deployments in Europe for JISC and in the United States for Kuali OLE. The platform will also be created to deliver access to the data that comprises the knowledge base and relevant services through the exposure of open application programming interfaces (APIs), enabling third party applications access using modern service-oriented methods.

The project aims to address some issues that limit the ability for libraries to efficiently manage their electronic resources that they assert has not been adequately solved in either the commercial or other community-oriented knowledge base projects. Paraphrased from the proposal, these issues include:

- Insufficient data regarding publishers and providers, such as on overly simplistic representation of relationships among content and provider roles in existing knowledge bases
- Lack of identifiers for entities in the supply chain
- Inadequate normalization of data across or within related management environments
- Barriers for organizations such as libraries or their parent institutions to openly access and repurpose data within current knowledge bases due to proprietary technologies and licenses

- Inability to track changes over time of any given title or other entities over time. The changes that any given title undergoes represent essential data for the management of electronic resources.

The GOKb project has just begun its work as of April 2012 and will continue for the next year. After the funded grant period, the project is expected to be absorbed into Kuali OLE. A model for ongoing governance and sustainability will be developed as one of the project's deliverables.

One of the early tasks of the group will involve developing the best data models for the knowledge base. The data model will specify which data elements and structure will need to be part of the global knowledge base and which would be managed in local systems.

GOKb proposes to use existing community-based data sources, such as GODOT to help seed its own knowledge base.

With work just underway on this project, it is much too early to place it among the primary products covered in this report. The backing of the Mellon Foundation, the involvement of JISC and the Kuali OLE partner institutions, and the increasing availability of higher-quality resource listings through KBART and other initiatives, give reason to consider GOKb as having significant potential. This optimism is tempered through a comparison of the resources already being wielded toward the commercial products which still do not entirely meet library expectations.

## Section IV. Results from Library Survey on Link Resolvers

To complement the data collected from the vendors, a survey was submitted to libraries to gauge their impressions of their link resolvers and the associated knowledge bases. The survey asked libraries to rate their general satisfaction with their current link resolver, its general functionality, the completeness of its associated knowledge base, and the promptness in updates. The survey also prompted respondents to give narrative comments regarding each of these issues.

### Number of Responses

Between February 20 and May 1, 2012 534 libraries have responded to the survey. An additional 22 libraries responded indicated that they do not employ a link resolver. The survey allows only one response per library. The majority of libraries responding were from the United States (361), followed by the United Kingdom (48), Canada (28), Sweden (15), Australia (15), and New Zealand (9). For a complete breakdown by country, see:

<http://www.librarytechnology.org/link-survey-2012-demographics.pl>

The survey used methodologies and technologies similar to those created for the annual library automation perceptions surveys:

<http://www.librarytechnology.org/perceptions2011.pl>

### Survey Instrument

The survey relies on the Library Technology Guides infrastructure, consisting of tables within a MySQL database, scripts written in Perl to present the forms and record the response data, and a connectivity layer using ODBC. Each survey entry is tied to a library entry in the lib-web-cats international directory of libraries. The linkage to the lib-web-cats record allows the survey response to be correlated with additional demographic information not directly entered in the survey, such as the library type, geographic information, collection size, and other factors.

The survey targeted to academic and research libraries primarily; 512 of the 534 responses came from academic libraries, 4 from National, 3 consortia, and 3 special. Five public libraries responded, only to report that they do not use a link resolver. Invitations were sent via Twitter, listservs, and to all academic and research libraries registered in lib-web-cats that had an email address registered for the automation contact.

A sample form used as the survey instrument is available:

<http://www.librarytechnology.org/lwc-link-survey-2012.pl>

It includes a section identifying the person responding to the survey. This information is available only to the survey administrator and is not displayed in the survey results available publicly

First Name:

Last Name:	<input type="text"/>
E-mail address:	<input type="text"/>
Choose a Password:	<input type="password"/>
Receive News? <input checked="" type="checkbox"/>	Check if you would like to receive monthly news updates from Library Technology Guides.

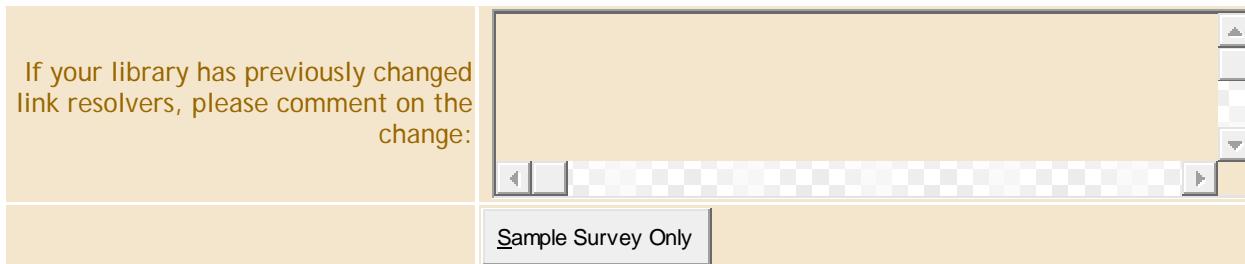
The second section records information about the current and previous link resolvers. Default values are carried over from the library's entry in lib-web-cats, which can be overwritten by the responder. The survey requests both current and previous resolvers in order to track the migration dynamics among products.

Current Link Resolver:	<input type="text"/>
Year Implemented:	<input type="text"/>
Vendor:	<input type="text"/>
Previous Link Resolver:	<input type="text"/>
Previous Vendor:	<input type="text"/>
Year Implemented:	<input type="text"/>

The third section records the numeric responses and narrative comments. Narrative comments were redacted in the public results to remove any text that might reveal the person responding or their specific institution. The original text is preserved in fields only available to the survey administrator and the redacted text is copied into fields available to the public result displays.

	0	1	2	3	4	5	6	7	8	9
How do you rate the overall performance of the Link Resolver and its Knowledge Base? 0=Not Satisfied 9=Very Satisfied	<input checked="" type="radio"/>									
Please give any general comments about the link resolver and its knowledge base:	<input type="text"/>									
How do you rate the performance of the link resolver in its effectiveness of connecting users to appropriate copies	<input checked="" type="radio"/>									

of electronic resources? 0=Not Effective 9=Very Effective									
Comments regarding end user functionality and usability:									
How do you rate the comprehensiveness of the knowledge base relative to the number of e-journals and other electronic resources held by your library? 0=Not Complete 9=Very Complete	<input checked="" type="radio"/>								
How do you rate the accuracy of the knowledgebase in representing electronic resources? 0=Not Accurate 9=Very Accurate	<input checked="" type="radio"/>								
How do you rate the promptness in which errors reported by libraries are corrected in the knowledge base? 0=Very slow 9=Very prompt	<input checked="" type="radio"/>								
Comments regarding the completeness and accuracy of the knowledge base or promptness of updates.									
How do you rate the tools offered for the library to configure and administer the knowledge base and link resolver? 0=Very Difficult 9=Easy	<input checked="" type="radio"/>								
What organization manages the link resolver for your library?	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>						
Is this library currently considering migrating to a new Link Resolver?	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>						
If yes, please list the products under consideration:									
Approximate number of e-journals held by the library:									



Online access to the survey results is available:

<http://www.librarytechnology.org/link-survey-2012-search.pl>

This interface also provides access to the comments contributed by responders, which have been redacted to preserve the anonymity of the responders and their institutions. To see statistics for each product and the comments, use the "Select Product Report" button.

The Survey Demographics button summarizes and categorizes responses by library type, product, and country.

## Survey Results

The first survey question measured the general satisfaction of the libraries with their link resolver. In this category, 360 Link from Serials Solutions earned the highest score with a Mean of 7.36, followed by SFX from Ex Libris at 6.89 and EBSCO LinkSource at 6.67. While the differences between 360 Link are significant, they are not dramatic. On average respondents rated 360 Link better than SFX or LinkSource in all of the categories except that for end-user linking performance.

Only those products that received 15 or more responses were in the main tables of the survey results. Statistical summaries for the products receiving fewer responses can be viewed only through the product selection option.

Ex Libris SFX was rated when the respondents were asked to consider how well the link resolver worked to connect library users to content. The differences were not large, but did show that SFX was perceived as more effective for its key function, even though 360 Link rated slightly higher in general satisfaction and in knowledgebase quality and comprehensiveness.

The one category in which libraries rated all of the products less positively regards their responsiveness in making corrections to the knowledge base. Ex Libris was rated especially low in this category with an average 5.80 score. This was also EBSCO's worst category (6.05). All the products scored lower in ease of administration than in other categories.

OCLC's WorldCat knowledge base did not appear in the main survey result tables since there were only 7 responses for the WorldCat Link Resolver, which did not meet the threshold of 15.

## Statistical Results

This section

Statistics related to the question: How do you rate the overall performance of the Link Resolver and its Knowledge Base?

Overall Satisfaction for Linking Product		Response Distribution									Statistics				
Company	Responses	0	1	2	3	4	5	6	7	8	9	Mode	Mean	Median	Std Dev
360 Link	126	1	2	3	16	42	46	16	8	7.36	7	0.62			
SFX	160	1	4	1	5	33	72	39	5	7	6.89	7	0.71		
LinkSource	45	1	1	1	2	5	3	18	8	6	7	6.67	7	1.04	
WebBridge	42	1	2	1	2	5	10	12	8	1	7	6.14	7	1.23	
All Responses	447	1	1	8	7	13	22	72	167	117	39	7	6.91	7	0.43

Statistics related to the question: How do you rate the performance of the link resolver in its effectiveness of connecting users to appropriate copies of electronic resources?

Effectiveness in End-user Linking		Response Distribution									Statistics				
Company	Responses	0	1	2	3	4	5	6	7	8	9	Mode	Mean	Median	Std Dev
SFX	160	1	1	2	8	18	51	67	12	8	7.26	7	0.71		
360 Link	126	2	1	4	8	19	38	36	18	7	7.09	7	0.45		
WebBridge	42	1	1	3	6	3	12	13	3	8	6.67	7	1.23		
LinkSource	44	1	3	2	5	2	16	10	5	7	6.61	7	1.06		
All Responses	446	1	2	3	8	14	36	49	144	142	47	7	7.02	7	0.43

Statistics related to the question: How do you rate the comprehensiveness of the knowledge base relative to the number of e-journals and other electronic resources held by your library?

Comprehensiveness of the Knowledge Base		Response Distribution									Statistics				
Company	Responses	0	1	2	3	4	5	6	7	8	9	Mode	Mean	Median	Std Dev
360 Link	126				3	14	26	54	29	8	7.73	8	0.71		
SFX	160	2	2	3	8	25	49	62	9	8	7.08	7	0.71		
LinkSource	45	1	2	1	3	3	9	18	7	8	6.98	8	1.19		
WebBridge	41	2	2	2	3	5	5	15	7	8	6.76	8	1.41		
All Responses	445	4	5	6	9	22	58	106	165	70	8	7.22	8	0.43	

Statistics related to the question: How do you rate the accuracy of the knowledgebase in representing electronic resources?

Quality of data in Knowledge Base		Response Distribution									Statistics				
Company	Responses	0	1	2	3	4	5	6	7	8	9	Mode	Mean	Median	Std Dev
360 Link	126	1	1	1	4	13	43	51	12	8	7.33	8	0.62		
SFX	159	2	4	8	16	33	52	38	6	7	6.59	7	0.71		
LinkSource	45	1	1	2	1	6	4	15	10	5	7	6.58	7	1.19	
WebBridge	41	1	2	3	3	8	9	12	3	8	6.51	7	1.25		
All Responses	443	3	4	11	17	36	64	138	136	34	7	6.85	7	0.43	

Statistics related to the question: How do you rate the promptness in which errors reported by libraries are corrected in the knowledge base?

Vendor responsiveness to implement corrections		Response Distribution										Statistics				
Company	Responses	0	1	2	3	4	5	6	7	8	9	Mode	Mean	Median	Std Dev	
360 Link		123		4	3	6	9	16	36	22	27	7	6.93	7	0.63	
LinkSource		43	2	1	3		1	7	5	11	10	3	7	6.05	7	1.07
SFX		157	1	2	11	9	19	17	31	35	21	11	7	5.80	6	0.48
WebBridge		40	2	1	2	2	2	7	7	6	9	2	8	5.70	6	1.26
All Responses		433	7	4	23	15	36	47	63	94	77	67	7	6.30	7	0.29

Statistics related to the question: How do you rate the tools offered for the library to configure and administer the knowledge base and link resolver?

Ease of Administration		Response Distribution										Statistics				
Company	Responses	0	1	2	3	4	5	6	7	8	9	Mode	Mean	Median	Std Dev	
360 Link		125	1	3	2	3	13	22	34	33	14	7	6.80	7	0.54	
SFX		157	2	1	7	8	14	17	27	39	34	8	7	6.11	7	0.56
LinkSource		44	1	1	4	2	8	7	11	5	5	7	6.05	6	0.90	
WebBridge		42	2	4	4	8	4	3	7	3	6	1	3	4.45	4	1.23
All Responses		439	7	6	17	23	27	52	72	103	93	39	7	6.21	7	0.33

## Migrations

The migrations seen from one link resolver product to another provide one indicator of product strengths and industry trends.

Taken only from the libraries that responded to the survey, some patterns emerge regarding those that have previously migrated from one link resolver to another. 30 libraries have migrated from SFX (29 to 360 Link, 1 to EBSCO A-to-Z); from WebBridge 8, (7 to 360 Link, 1 to SFX); 2 migrations from EBSCO A-to-Z (1 to 360 Core, 1 to 360 Link).

The survey also asked libraries if they were considering moving to a new link resolver.

Product	Total	Yes	percent
SFX	163	30	18.40%
360 Link	129	10	7.75%
LinkSource	46	6	13.04%
WebBridge	42	10	23.81%
WorldCat Link Resolver	7	1	14.29%

Although 30 out of the 163 libraries currently using SFX indicated they were considering making a change, not all were attributed to dissatisfaction. Two libraries indicated plans to implement Alma, 2 to a hosted version of SFX, one from SFX version 3 to Version 4. Four others anticipated a change of resolver associated with a planned implementation of a new discovery service. Of the 10 libraries using

360 Link that flagged interest in migration, all mentioned products from competing companies as alternatives.

Several comments reflected that planned changes in their link resolver were associated with plans to implement a new discovery or management solution, as reflected by these explanatory comments.

- [SFX] EBSCO EDS, WorldCat Local (I'm assuming we'd rely on the knowledgebase that comes with these web discovery tools rather than SFX)
- [SFX] Maybe migrating to 360 due to using Summon as discovery solution.
- [SFX] 360 Link (We are pretty satisfied with SFX but we will implement Summon and it will be easier to manage e-resources in one single point)
- [360 Link] Transitioning to WorldCat knowledge base with WC Local as sole OpenURL resolver
- [EBSCO] We are in the process of migrating to the Ex Libris Primo (and SFX) product during the current academic term. The new product will be managed by a consortium.
- [360 Link] EBSCO LinkSource, if we get EBSCO Discovery
- [360 Link] Alma is to include a link resolver
- [SFX] WorldCat Local the OCLC ILS

## Statistics

To analyze the results, a few scripts were written to summarize, analyze, and present the responses.

In order to avoid making generalizations based on inadequate sample sizes, the processing scripts included a threshold variable that would only present results when the number of responses exceeded the specified value. The threshold was set to a value of 20.

For each of the survey questions that involve a numeric rating, a set of subroutines was created to calculate and display simple statistics.

- **Responses** value indicates the number of survey responses that made a selection for this question.
- A **Response Distribution** array lists the number of responses for each possible value from 0-9.
- The **Mode** indicates the numeric response that received the most selections.
- The **Mean** is the average response, calculated by adding together all the responses and dividing by the **Responses** value, rounding to two significant decimal places.
- The **Median** is the middle response, calculated by placing each of the responses in a sorted array and selecting the middle value.
- The **Standard Deviation** was calculated by subtracting each response value from the mean, squaring the difference, summing the squares and dividing by the number of responses to determine the variance. The standard deviation is the square root of the variance.

The "survey-report-by-category.pl" script processes each of the numerical ratings, displaying each of the statistical components listed above for each product that received responses above the threshold value. This report provides a convenient way to compare the performance of each ILS product for the selected

question. The report sorts the statistics for each product in descending order of the mean. The report categories available correspond to the survey questions with numerical scale responses.

## **Survey Comments**

The narrative comments supplied in the survey provide a great deal of interesting information. The comments reveal some positive and negative aspects of each product.

### **Serials Solutions**

#### ***360 Link General Comments***

- Excellent performance and very comprehensive KB
- Good information, but the integration with specific databases is patchy. Requires a lot of work to input databases into the Client Center
- Serials Solutions has been very helpful, including providing some custom reports that we needed.
- Ideal is a single knowledge base, rather than a knowledge base for OpenURL, federated search, discovery tool, etc
- SS has made efforts each year to improve its admin portal
- Seems to be kept up pretty well and problems are solved quickly.
- Like that it shares a knowledge base with Summon and the ERM.
- From brief experience it has a better knowledge base than EBSCO's Link Source, slightly better than Ex Libris's SFX, and slightly poorer than Teldan's TDNet (we only subscribed to the A to Z). My observation re: linking is in line with Library Technology Reports vol 46 no 7, 2010
- Not a big fan of the overnight reloads, but other than that it's great.
- Data from some suppliers is slow to be updated
- Very useful product.
- Overall holdings data in kb is accurate and easy to manage. Individually subscribed journals usually require manual holdings maintenance.
- Very comprehensive. Doesn't always successfully resolve to the article or book chapter level. Serials Solutions support is very responsive, though.
- Still pretty satisfied. At this point, we're more happy with the accuracy of the knowledge base than with the link resolver itself. The interfaces (public and admin) could stand to be updated. We're also using the link resolver differently now that we have a discovery tool than we did when we just had the catalog and various databases. Since our discovery tool is from another vendor, the two don't always work seamlessly together - and each vendor blames the other for any issues.
- Resolver works well. More rapid response in the knowledge base to changes in the publications is desirable.
- Annoying : each article gets two prominent 360 Link icons that confuse students and mask any full-text offered by that database.
- The link resolver works well. The administrative module is getting better. I wish 360 was a better product
- 360 Link seems to work well. Knowledge base is fine for our purposes - just a couple of odd resources they don't support yet.
- It is very inconvenient to wait till the next day for changes.
- The kb is generally accurate in terms of coverage and the ability to link appropriately. When inaccurate data is found, the vendor is willing to take and implement changes.

- it's easily affected by metadata errors on the part of individual databases. Serials Solutions has been very helpful at identifying where these errors lie when they are brought to their attention, but their response is always to have us contact individual vendors with instructions to fix their metadata errors. I think (considering the price), serials Solutions should be contacting vendors FOR us to help fix these errors instead of requiring us to pass along information secondhand.
- Any link resolver is only as good as the knowledge base (supplied by vendors/publishers) and standardization of data. Works about 60% of the time. Should be as seamless as its intent. Confusing for users.
- I depend on Serials Solutions tech support for any problems. There are a few glitches now and then
- Serials Solutions does a very good job normalizing and maintaining the data in its knowledgebase. They are quite responsive to requests for additions and revisions to the data. The link resolver generally works well. Its primary flaw is that of all OpenURL resolvers -- it breaks down if there is incorrect metadata on either side (source or target).
- We are much more please with 360 link than SFX (which was not hosted), mainly because our core knowledge base and our discovery service our also Serials Solutions products. The updates are more timely than SFX. But, there are always problems with link resolvers, especially data coming from publishers. It took forever to link to dissertations and thesis, still have newspaper linking issues, and proceedings. The knowledge base is mainly accurate and updated in a timely manner.
- 360 Link links very quickly to material provided by subject specific vendors such as JSTOR, Emerald, Elsevier and with ejournals directly from publishers. However there are often error messages when linking to aggregators such as Ebsco or Gale
- It works most of the time, but there are certain categories of information that are problematic. Links within Ebsco from 360 LINK are often problematic, and it does not deal well with articles that use DOIs.
- Serials Solutions has grown steadily into a powerful tool
- Works great with Illiad.
- We are often frustrated by the lack of functionality.
- Overall it works well for our purposes, especially the ease of use of the interface. We have considered other options due to price differences.
- As well as the Link Resolver, the knowledge base is used for our A-Z and Discovery Layer and populates Google Scholar and PubMed Linkout. This means there is a consistency of results across multiple products
- It doesn't handle some queries about previous titles very well, or alternative titles; but is otherwise excellent
- The knowledge base is ok, the link resolver software is not very configurable. It doesn't always take users through to full text when we have it; it is confusing for users as it initially gives the impression that it is going to take them through to full text when we don't have the full text. It is expensive for what it does and we are looking at either replacing it with another product, or not having a link resolver at all and spending the funds saved on more "plus full text" journal index packages.
- Vendor supplied title lists and coverage information varies but is never accurate.
- Problems that I have found in the Serials Solutions knowledgebase are usually resolved quickly.
- I did have to wait a bit for some databases to be included (EBSCO's Food Science Source was one) but after some nudging of both Serials Solutions and EBSCO, it was added. Managing the SS software is straightforward. SS's decision to separate out e-books from the journal links and quote an additional (steep) fee to manage books may turn out to be a

reason to look at other products when our ebook collection gets big enough to worry about.

- Rating for resolver. Serials Solutions improved the situation by changing, where possible, to non-open url links. Knowledge base is reactive, takes time for changes to be effective
- Very easy to use and set up.
- There can be some delay when titles change publishers, depending on how quickly the publishers provide that information to SerialsSolutions.
- Serials Solutions is very responsive when we ask about issues or customizations.
- The link resolver is easy to use, especially over its major competitor. However, we have found some general problems with the performance of the product. 1. The way the journal titles are displayed are not always in synch with the way MARC is displayed, especially in terms of punctuation. 2. During peak times, the lag time to process commands is extremely slow. 3. When working with the e-Catalog feature, if you change the pull down option for either Journal, Book, Database, Provider, it deletes whatever has been previously typed into the field.
- The administrative interface is slow and very awkward. Also, any changes we make to our data in the admin interface take up to 24 hours before they are in the system for end-users.
- Linking failures seem to occur more frequently when accessing via Summon. It is unclear if metadata mismatch is more common between Summon and full-text sources or if we are simply "discovering" more pre-existing problems.
- Doesn't allow split holdings notes
- Wish that it worked better with Factiva and Lexis/Nexis content in retrieving articles. We wish that they would update our e-book selections more frequently. Additional foreign language content links would be assume.
- Knowledge base is fairly broad. Not clear exactly how frequent resources are updated.
- We're happy with the work Serials Solutions is doing. We're less happy with the cooperation of database vendors like EBSCO.
- in general the most reported problem is with links to ebsco resources that doesn't work.
- It can be a little bit annoying that changes take a full day to update
- We know that it works and that it is used and have some usage statistics to confirm this, but we are only actively aware of problems when directly reported to us. These are small in number
- very satisfied with the Serials Solutions knowledge base - their team does an excellent job following title histories

### ***360 Link Functionality Comments***

- Extremely user-friendly, I consider it markedly better than the major competitor. Flexibility to present notes, links, etc is excellent.
- We're using the 1-click option that we've tweaked to tell clients to be patient waiting for a download
- Easily customizable, friendly interface
- Extremely reliable. Using javascript in the footer allowed us to string along necessary data to the end of the OpenURL, see Serials Solutions and Direct Request
- Only as good as the knowledge base
- Interface a little heavy on library jargon.
- The look and feel of the interface is not as easy to amend as SFX.

- We will re-design the user interface per recommendations made in LTR 46(7). Most users do not find the 360 Link interface intuitive, even in vanilla form, as they rarely scan down the page when a link fails to resolve.
- Usability of ambiguous or journal-level links is poor; queries may fail with inexact matches. May just be a limitation of OpenURL as opposed to SerSol implementation
- Lack of cooperation between content providers and publishers significantly constrains the effectiveness of link resolvers. Some progress has been made recently, but obstacles remain.
- Authentication is the big issue. On campus links might work fine, but jumping through hoops off campus not necessarily a good user experience.
- Does return errors sometimes.
- My experience tells me the product is effective, but I don't get much feedback from my reference colleagues to either support or deny this.
- Search results page is a bit confusing for users who are not familiar with the tool when only journal- or database-level linking is possible. Users expect the tool to be invisible.
- Usability for the user is still problematic. Ser Sol needs to update the interface with more customization options. We wish we could customize it more directly and more extensively. To date, we still have to contact the vendor to apply changes to links or language on most pages and there are many restrictions.
- Links too prominent. Students click on the 360 link rather than the full-text and get very frustrated because they loop back around to where they were without getting to the article.
- We have so much database overlap because of consortia purchases it can get confusing over duplicative entries.
- Well, we're a small community college and don't have that many resources to begin with. If the library has access to the resource, the Serials Solutions products can get the users to it. They often have to navigate a series of complicated screens, which compromise usability
- For resources we have access - the service works great. For resources we don't have access - or we have document delivery the service is sub par
- Will be helpful if it is completely customizable and can be updated in real time as opposed to waiting for server update.
- The interface allows for only minimal customization. The ILL link should be prominent. When FT is available in another database, the information could be displayed more clearly. We think it can confuse the novice user.
- We have recently implemented Serials Solutions 1-click feature, which patrons and librarians both like. It connects users to resources without an intermediary menu/results screen. In about 9/10 cases, this works beautifully. In the cases where errors cause linking to break down, it can be confusing, but no more so than it was with a menu/results screen.
- Nature of the Beast....users want direct linking and even one-click options are not always accurate and the ranking of products in SS is not great. The menus are not always intuitive and if the user experiences a dead end they cannot troubleshoot independently. I would also note that many Reference librarians do not know how to troubleshoot a link resolver issue or how to use all of the options

- I had extensive input in the design of the end user screen and SS has been excellent in making the change I request
- We are able to specify preferred sources for the link resolver to use, which helps with the previous problem.
- We have learned to enable shortcuts to ILL email forms for example, when the full text is not found.
- The only thing that I want to mention is the inconvenience of not being able to verify updates instantly. Any updates will not be live for the public to see until the next day.
- A link resolver is only good as the data that it receives. Problems we receive regarding the link resolver normally relate to incorrect citations or data, pre-publication, e-publication vs print publication
- Most users seem to find it an easy process
- As above, it is quite clunky and confusing for users. They get the impression that if they click on the 'link to full text' link that they will be taken to the full text of the article, but that link only takes them to the link resolver interface. Most of the time we don't actually have the full text. The layout is poor. There are options for searching by DOI and for article citation details, but they are poorly laid out and I don't think many of our users use these features.
- OpenURL has a whole set of issues that make it less than reliable.
- We have utilized Serials Solutions' one click option. Our undergraduate students especially appreciate being sent to the full text whenever possible instead of being sent to a list of options for the full text
- Really appreciate the links showing up in Google Scholar because we are primarily a science institution. There are occasional links that do not work but overall the system works well. Students are very comfortable using this linking. They just are used to going to Google.
- It sometimes does not take you to actual article, but only journal title. This extra step confuses users.
- The new ProQuest interface does not provide correct OpenURL genre indicators which leads to user frustration - but that is a new ProQuest interface problem, not Article Linker's problem
- Serials Solutions improved the situation for Summon by changing, where possible, to non-open url links.
- Standard UI. Ebooks are intergrated into the resolution. Problem is the Serials Solutions ebook records have degraded or not improved, so we are finding that we need to get some sets from OCLC.
- Only complaints received were down to incorrect information input into A to Z so link resolver did not work correctly.
- We have one-click set up and have organized the priority to give emphasis to reliable sources, but we also have a banner that displays allowing the user to go to all of the options if the one-click result doesn't get them the article.
- There are outstanding incompatibilities between 360 Link and some of the most important databases eg EBSCO & Nexis UK

- End users don't seem to notice the steps they can take if the electronic version is not there, and there are some confusing things in the way 360 Link displays multiple links to an item.
- The article-level links sometimes don't work. Whether this is the link-resolver's fault or the aggregator/database's lack of good metadata, there is definitely a disconnect there
- Linking to articles seems to be easy for users.
- There are some features it does not have that we liked in our previous link resolver, such as end-user links to journal listings by database and also by publisher.
- We have enabled one-click, which is an improvement for users.
- sketchy results when using "The" at the beginning of a journal search. Also problems with "&" vs. "and"
- Default screens have some customization. Supports link prioritization and "one click" to full text. Good API.
- It's hard to figure out the best way to explain why a link failed to a user. Serials Solutions also needs an immediate button for reporting broken links. It should automatically send the link information to the company. Users shouldn't have to fill out forms; librarians shouldn't have to individually report and diagnose every broken link.
- The link resolver seems very good. The few times when users get to the wrong item is usually because a database has faulty data.
- The results page could be clearer for users, for users new to academic libraries the range of links offered - article, journal, resource, is confusing
- Even though it takes constant maintenance, SS has excellent customer support and are always quick to process tickets.
- I think I would have a hard time ranking any system much higher than a 7 bc every system is so dependent on data entry being correct
- We are having problems with false results and experiencing problems with compatibility with IE 8 and higher.
- too many false no's - We have one-click set up (not sure if that's exactly what the functionality is called), where a click on the OpenURL button tries to like the user directly to the article via the preferred provider, but this seems to fail about 25% of the time (for me anyway)

### ***360 Link Knowledge Base Comments***

- Accuracy is very good, most problems are caused by content vendors not Serials Solutions. Promptness of support response and updates have slowed as the company has grown and, in my opinion, no longer dedicates an appropriate level of resourcing to support.
- SS are usually pretty good with updates, but some data sets purchased by Australian customers aren't available as job lots so some other data set has to be manually manipulated to do the job.
- Accuracy is good, but the problem comes in integration with Summon and Aquabrowser
- Still have outstanding metadata problems from Sept 2011.
- the only drawback really is that it cannot (for obvious reasons) incorporate index dbs
- SS respond quickly to questions, it seems better than Ex Libris. There is still a problem with the coverage and in particular the matching of particular packages that we buy with the knowledge base

- Service usually varies from 1-3 weeks depending on the complexity of the request. Teldan was usually faster (2-5 days) at providing service but at higher subscription cost.
- My understanding is that Serials Solutions updates the knowledge base when it hears of a problem from customers. Unless I regularly compare title lists with their knowledge base (which I have no time to do) I'm not aware of discrepancies. Once I find a problem and report it, I don't know how long it take them to correct it.
- We don't report many errors, and the few we have are usually handled efficiently by the vendor.
- The only issues I've run into with missing titles have been with open access publications. Requests for additions were promptly addressed.
- We've been very pleased with the Serials Solutions knowledge base. The vast majority of our subscription content is included in the knowledge base, and if we don't find something there, we can usually have them add it for us within a reasonable amount of time. This is really the strength of 360 Link.
- Sometimes the direct journal url is lacking, until the library brings it to their attention. There are several publishers that are not in the knowledge base so library must create library specific databases within the system.
- I have not heard many complaints from reference librarians recently.
- I don't like the fact that changes to our resources do not take effect immediately--there's an overnight update run by Serials Solutions. On more than one occasion the update either didn't run or failed and resources weren't updated as they should have been.
- Oftentimes inaccurate data are fixed within a week, however, there are times when months lapse before errors are fixed as requested. The completeness question is complicated since e-books are not always represented well (in the wrong packages, not available at all, etc.), or with inaccurate data. For e-journals, though the kb is much more robust and accurate.
- They are very responsive when issues are brought to their attention. We've had à la carte new subscriptions that didn't appear as title options within platforms, and they've added our titles within a week of being notified.
- In general, we've had very good results getting errors in the knowledgebase fixed. Some errors are fixed very quickly, especially when the correct information can be independently verified using a publisher web site or library source like CONSER or the ISSN portal. The cases where updates take longest are those where publisher representatives are required to confirm or provide information to the knowledgebase vendor.
- There is a problem when coverage and other publisher information is inaccurate. I now send tickets to both the link resolver vendor and the publisher. As I am filling out this survey, the coverage is totally wrong for one of the EBSCO/Wilson databases and I would expect that this will not get resolved for a few weeks at least. Wrong links, coverage, etc can be corrected quicker.
- Knowledge base is updated monthly
- Most of the errors are corrected fairly quickly, but a few have taken a while due to vendors not really talking to each other very effectively.
- Serials Solutions provides excellent support
- Very prompt updates. Accuracy of open access journal holdings are a weakness of Serials Solutions' knowledgebase, and presumably of other knowledge base providers as well.

- I still dont understand why searches in databases yield different results than searches performed in 360 search, our federated search engine and not all databases support open url linking.
- Completeness: Some Australasian and smaller vendors are not openurl compliant/aware so these are not included in the database. Library staff are responsible for ensuring library holdings are accurate in the knowledge base. Changes go live overnight. Serials Solution are very proactive in ensuring any changes coming from the vendor (changes in titles, URLs, mergers etc) are made in the knowledge base
- It is pretty good. We are a specialist arts library with a number of niche market resources which we often find are already in the knowledge base or are added promptly once Serials Solutions are made aware of them.
- As with a lot of library technology, when we report errors the vendor claims it's the provider and the provider claims it's the vendor. Neither are that fast to resolve issues. Having said that, when we can provide examples of mistakes, Serials Solutions fixes them very quickly.
- I am consistently impressed by the knowledge and speed of Serials Solutions' staff.
- The knowledge base seems to reflect our holdings. When I have noticed a problem I can usually track it down to something incorrect at our end. I know when I change something it shows up right away. I upload our print holdings and those changes show up immediately.
- Legal resources not well covered, eg Lexis.com, Lexis Nexis AU, Westlaw
- It takes time for them to change the knowledge bases. Claim they have data from publishers, but new titles slow to appear in knowledge base
- How do we really know how accurate the knowledge base resolution is?
- The knowledge base is updated on a very regular basis and improvements are constantly made.
- If it's simple, they respond within a few days at most. If it requires extensive changes to the KB, it gets punted to the data team, who can take several months to respond. One work-around is to create a local collection with the corrections until the KB can be updated.
- KB has many inaccuracies relating to title changes. Linking problems can arise when the link created uses an older/newer title or ISBN from that of the target. We see more of these problems in 360 Link than we did with SFX. How much of the difference is due to the implementation of One-Click in 360 Link (we did not use direct linking in SFX) is unclear.
- Serials Solutions responds quickly and usually corrects errors in a very timely manner.
- I've had nothing but great service from Serials Solutions. It seems like most problems are solved or updates made within 24 or 48 hours.
- Serials Solutions staff do a good job in maintaining their knowledgebase and fixing any errors reported. However, I think they need to increase their staffing. It takes quite some time for updates to get processed.
- Promptness varies a great deal. Tech support responds quickly. New providers/titles are often added quickly. But some problems take a long time. One example for [...] - correct linking to IEEE Explore - took nearly a year to resolve.
- Support department is slow. Any changes made locally don't take effect until the next day
- Completeness depends on individual vendor. Updated daily.

- It's difficult to determine where a problem occurs and who should fix it. News content is particularly difficult to get resolved. Problems with academic journal holdings are easiest to get fixed.
- The vendor is quick to respond if it's an error or misconfiguration on their end. If it's a matter of holdings needing to be reloaded from provider, it can take a while since they operate on a schedule.
- Systemic errors involving large groups of citations by specific vendors can take quite a while.
- Great customer service by Serials Solutions. Often fixes occur within the same business day.
- it is mainly Swedish resources that are lacking in the knowledgebase example is the agreements on national level (bibsam-agreements)
- It would be nice if this product had real time updating instead of needing to wait until the next day to see changes.
- Australian databases may take some time to be included.
- Timeline for response to error reports is inconsistent. Sometimes it can be prompt, but often is not.

### *360 Migration Comments*

- [SFX > 360 Link] We changed partially due to cost, but mostly because we were already doing ERMS in SS and trying to kludge knowledge base updates in SFX. Too painful for words at the time. User experience greatly improved when clients were using the same kb as the subscription managers.
- [SFX > 360 Link] 360 is much easier to update and maintain than SFX
- [SFX > 360 Link] SFX was subscribed to by a consortia; Serials Solutions was a cost-effective option that libraries moved to.
- [SFX > 360 Link] The back end knowledge base, is better than SFX. Don't like having to wait till the next day for changes to be live though. Do like not having to run updates, but don't like being less aware of changes that have been made by Serials Solutions
- [SFX > 360] Number above is number of unique journal titles in Serials Solutions. Moved from SFX to SS because SS was sooooo much easier to use. At the time, SFX was unix based; SS was and is web-based.
- [SFX > 360] SFX was provided for free through a consortial license, but was so cumbersome to administer that our library migrated to Serials Solutions. This was sometime around 2008.
- [SFX > 360 Link] We do not have a lot of stand alone subscriptions to individual e-journals. Serials Solutions does a pretty good job on keeping up with database changes. We had used SFX before and it is terrible.
- [SFX > 360 Link] I worked at a different institution during the migration to 360Link, but it seems to have been a successful switch. For the most part, the technical aspect of the migration was handled by Serials Solutions, and we have benefited greatly. The tools are better for Tech Services, while the patrons have found fewer linking errors.
- [SFX > 360 Link] We changed from SFX to Serials Solutions primarily to support the adoption of Summon. In many cases, knowledgebases are being used to power more than just link resolvers -- they are the data source for discovery tools, ERM tools, statistics

management, etc. In our case, the desire for a certain discovery tool was important enough for us to switch link resolvers. In most ways, we've found the two resolvers to be comparable, with some increase in the quality of customer service.

- [SFX > 360 Link] As stated above, we were managing two knowledge bases and it became too much when we implemented Summon. Also, there was more maintenance because it was being hosted by our consortia
- [SFX > 360 Link] This comment refers to above question. We link many open access journals, as well as consortium databases, so the total number is greater than only the ones we subscribe to.
- [SFX > 360 Link] SFX was difficult to manage. Serials Solutions is a great improvement.
- [SFX > 360 Link] We switched as part of the [...] move from SFX to 360 Link.
- [SFX > 360 Link] Used SFX until the end of 2010. Already using Serials Solutions marc records service so moving to 360 link meant we no longer had to maintain 2 knowledgebases. We also moved to Summon for our discovery service at the same time, and having all products with the one vendor simplified maintenance.
- [SFX > 360 Link] We changed from SFX because only 2 of the 3 libraries in our consortium used SFX and it was too difficult to maintain. We moved to Serials Solutions with all 3 libraries, which was easier to maintain and less costly for all 3 schools.
- [SFX > 360 Link] Moved from SFX after switch to SUMMON
- [SFX > 360 Link] Changed from SFX to 360 Link and the switch was somewhat painful. SFX matches on ISSN and 360 Link matches on Title so there were problems the titles from the two knowledgebases did not match perfectly. Unfortunately, they did NOT both use the authority title at all times.
- [SFX > 360 Link] We migrated from SFX to 360 Link, at the time of change SFX was a better link resolver product but we wanted to use one vendor to manage electronic resources, Serials Solutions suited our over all requirements the best
- [SFX > 360 Link] Moved from SFX to 360 link when we added Summon to our suite of products.
- [SFX > 360 Link] Ser. Sol. 1) provides superior, more responsive customer service 2) less manual maintenance b/c service is hosted 3) knowledgebase is more inclusive (i.e. more content)
- [Ovid LinkSolver> 360 Link] Moved from Ovids LinkSolver to 360 link as part of a Federated Search engine change.
- [Godot > 360 Link] We moved from Godot to 360 Link because a decision was made to purchase serial solutions marc record service for ebooks and journals. Staff were maintaining two knowledge bases (Cufts and SS) for several years. In reality CUFTS was neglected and the link resolver suffered heavily as a result.
- [Article linker > 360 Link] Simply migrated with the company - Webfeat to Proquest Serials Solutions.
- [LinkFinderPlus > 360 Link] Previous resolver was an absolute nightmare - setup, maintenance of KB, and (non-) performance. Change was like night and day.
- [LinkFinderPlus > 360 Link] It's been so long I can't even remember the name of the Voyager product. It was a first generation attempt at Link Resolver and it was awful.

- [LinkFinder Plus > 360 Link] Link Finder Plus required a lot of staff time is maintaining the knowledge base. The change was relatively easy and stress-free. The Library was already using the Serials Solutions A-Z list, so already had the knowledge base in place, so it was a matter of just activating the link resolver functionality. The changing of the images/urls etc on vendor platforms took a couple of days to complete mainly because though the library could change the majority using the vendor provide administration interafces, some had to go to the vendors to make the change.
- [LinkFinderPlus > 360 Link] We've been using our current product for a while, previously using Endeavor's LinkFinderPlus. The match between serials solutions and the LFP knowledge base was only about 50%. When we considered that a good deal of staff time in managing ejournal access was spent in ensuring accuracy of the data in Serials Solutions it seemed logical to migrate to their openURL product.
- [LinkSource > 360 Link] Had Ebsco, but found it difficult to administer...went back to Serials Solutions when they matched the Ebsco price.
- [WorldCat Link Manager > 360 Link] We were told the OCLC product was being phased out.
- [LinkSource > 360 Link] We were unhappy with our federated search resource (WebFeat pre-SerSol buy-out), and our ERMS was 6 months away from being discontinued (Meridian), so we were looking for something that had an integrated KB for link resolver, A-Z list, federated search, and ERMS. And a user-friendly front-end interface. And within our budget. This is why we changed. Our current search for the best (for us) web-scale discovery resource may prompt another change, as we (and by we, I mean me) do not want to maintain multiple knowledge bases.
- [LinkSource > 360 Link] 360 Link is generally more reliable but with big gaps in functionality (see compatibility comment above)
- [OLinks > 360 Link] Our previous link resolver was a home grown version within our consortium, but it was really only set up to deal with journal articles, so when we implemented Summon, we needed to change to something that could handle other electronic material types.
- [EBSCO A-to-Z > 360 Link] I think the change was driven by the library consortium we are members of.
- [Muse-Global > 360 Link] We previously had Muse-Global, which was purchased via Swets Information. This was appalling software and the customer service from both Swets and Muse was appalling. There was no configuration interface, any changes had to be done by Muse, who were very slow to do anything.
- [WebBridge > 360 Link] We still use WebBridge from the WebPac and find it quite adequate for the purpose. For the rest, 360Link is much easier to use than WebBridge.
- [WebBridge > 360 Link] We've only had 360 Link in production for a month, so it is early. We do know it is a significant improvement over WebBridge. We ran an internal test comparing ersusts of WebBridge and 360 Link in December and found that 360 Link is offering functioning full text links about 40% more often.
- [WorldCat Link Manager > 360 Link] We were satisfied with WorldCat Link Manager (WCLM) and would have liked to continue using it. However, OCLC announced at one point that it would no longer offer WCLM as a standalone service. When we were told that WCLM would only be available bundled with WorldCat Local, and would have a significant price increase because of the bundling, we switched to another provider. After we had migrated our

data, it was announced that OCLC would again offer WCLM without WC Local - but we had already signed up with another service by then.

- [Gold Rush link resolver > 360 Link] We had Gold Rush previously. GoldRush had great customer support but Serial Solutions had larger knowledge base. Also the knowledge management interface for staff was much better in Serial Solutions.
- [ArticleLinker > 360 Link] TDnet promised product development and improved customer support - they never followed through.
- If we migrate to a new 'ILS,' we would most likely have to move this activity too. But for now we are very satisfied with the SerSol products.

## Ex Libris

### *SFX General Comments*

- Knowledge base is very slowly updated
- Knowledge base is ok. For us is very important, that we can implement our own services into our SFX instance.
- Unstable and difficult to manage.
- Still very new to us - we are still in the implementation stage
- Updates to key resources are often slow to arrive. Even well advertised changes in provider (Wilson Art Index to EBSCO) can fail to be implemented in time, leaving us without resolver links to a resource. It may be poor links with providers, but that is the role that such outsourced providers said they would take on for their customers.
- The link resolver itself, I rate a 9. The knowledge base I rate a 6.
- SFX has quite an American bias with significant UK content being unavailable, for example Gale content. Even when requested, content is not added quickly, if at all. But the newer version (4) is much more efficient. It is more easily updated and small changes are actioned more quickly too. I like SFX's general ability to make significant localisation rather than having to rely on requesting such changes as is the case with other knowledge bases.
- The performance is good, but ExL struggle to keep the knowledge base up-to-date. We as librarians are frustrated because the database providers provide us with more reliable information than ExLibris has access to
- SFX has cumbersome interface that makes modifications of resources difficult. That interface was improved significantly with SFX3
- Sometimes it takes a while for the new information from the publishers to get entered into the Knowledge base.
- Relies on having enough staff to run the updates as we are a non-hosted service
- It is not the resolver fault that vendors keep changing the content of databases and e-journal packages. ExLibris could be a little faster with updating links and targets.
- Seems adequate--as we are locally hosted, the local knowledge base does not get updated as soon as desired.
- We are enthusiastic about the basic features and functionality. Even though weekly revisions are a great improvement from monthly rebuilds we would like to see real time updates of knowledgebase additions and changes.

- It is usually pretty good, but every now again there is a problem. Early in 2011, something went wrong in a update where SFX had data showing that we had a current year subscription for numerous titles that we did not actually own. It took about 2 months before the knowledge base was corrected. Our SFX menu is designed to suppress the ILL link when we have the full text, so this created a real headache for awhile.
- It works well with ejournals, but not reliable with free ejournals. We have more problems with ebook
- Since the upgrade to SFX 4 in 2010, there have been very few problems with the knowledge base that aren't just related to the way we use it.
- It is sometimes hard to identify when the problems with knowledge base data are due to vendor data problems vs. link resolver "issues"
- Great improvements with Version 4 for the KB administration (search and navigation can now be considered easy or even user friendly).
- Difficulties in managing and completely the monthly update files are causing considerable drain on the staff. Statistics still aren't working properly for us.
- This is sort of a difficult rating to quantify, since I only have first-hand experiences with one link resolver.
- When they moved to weekly updates, the amount of time devoted to keeping things updated increased accordingly. We are fortunate to have centralized staff who manage much of the updating on behalf of the multiple campuses in our university system. However, we do also manage a cluster of databases and ejournals in a campus-specific instance on the central server.
- Our link resolver is managed by The Alberta Library consortium so we have to do very little configuring or troubleshooting. We have only a couple of ejournal subscriptions that are not part of an aggregated database. The cost of SFX is considerable and in the future we may look to another link resolver but are not there yet.
- Generally satisfied. Wish updates were more accurate.
- It has a very extensive knowledge base, with many more resources than we could provide to our users in the past. It does seem that sometimes there could be better communications between ExLibris and the publishers/providers. The knowledge base is only as good as the data provided to ExLibris by those vendors.
- Its pretty comprehensive. Sometimes they are a little slow getting updated feeds from vendors. Also sometimes the vendor supplied data is not as accurate as we would like. I am hopeful that standards like KBART might help with this ongoing issue.
- Regarding the configurability of the menus - the current SFX menus are a pain to deal with due to the tables-based layout.
- The SFX link resolver has proven to be a reliable technology for us for over a decade. The SFX KB contains most of what we need.
- We have only had SFX running for a few months now; we have not had much time to evaluate its KB.
- If publisher products are missing and we don't want to wait for the vendor to add them we can add the information (packages and titles) to the knowledge base for use by our users.
- Absence of packages from regional contents in the knowledge base (eg: those that exists only for a given country/language)

- Generally, excellent - occasional glitches with the Knowledgebase or with tech support.
- Hugely complex software of which we were led to have high expectations and which are not always met. Vendor appears to underestimate the amount of work required by library staff to maintain accuracy & currency of local data
- Routine mixups. Many involve open access journals being incorrectly routed through our proxy server (which does not have entries for them and therefore bars access), but others are higher profile. Harvard Business Review, our single most requested journal, keeps dropping out of our holdings on SFX. At one point we discovered that nearly a thousand popular magazines (such as Cosmopolitan) had been non-functional for three months.
- SFX 4 has moved to a weekly update schedule, which has provided new resources, updates, and fixes faster than before. But we've seen lately several of the resources that are updated automatically based on feeds by content vendors have had errors - mostly in coverage dates.
- SFX works pretty good with the openURLs it gets - the quality of which depends on the vendors providing the information, and the vendors that receive the openURL requests. One issue that we've struggled with for the past several years is openURL links to ETDs on the ProQuest Dissertations & Theses Full-Text Database. Vendors cite dissertations/theses differently, which affects how openURLs are constructed and, consequently, whether ProQuest can interpret the openURL requests it gets. With the migration to the new platform, ProQuest seems to have improved its openURL, but there are still some issues with ETD openURL requests. I mention this example because, even though SFX has no control over how vendors create and interpret openURL requests, it is not always very helpful in helping vendors understand \*why\* changes need to be made. Oftentimes, when one reports an issue, they respond that it's the vendor's fault and that one must contact the vendor. It is frustrating to get caught in the middle, since vendors are less likely to pay attention to a lone customer reporting an issue than they would to a company like Ex Libris that serves a large community of libraries.
- The KnowledgeBase is not always updated as it should be and that causes problems for the end users. There are long delays in updated information regarding new titles or specific packages the library bought.
- The most frequent problems are related to title changes. Keeping the KB current with that latest changes seems to be challenging.
- SFX is a necessity and I do feel it does a great job. There are, of course, some problems, but overall, I think it is a great resource.
- The link resolver works fairly well for end users. I find the data in the knowledge base requires a lot of manual correction.
- Find the Knowledge base easy to use.
- The Link Resolver works well. The KB, like all of them, is lacking. There is lack of specific coverage dates (often, especially for aggregators, which I feel is where you really need the specific information, there is only a year given, not vol. and issue coverage information.) Also, due to the nature of specific deals with specific publishers, then the consortial arrangements made between institutions, it's hard to keep track of which groupings of titles should be used and whom should be responsible for keeping what packages of titles up to date.

- There is always a delay between journals changing over to new publishers or a new journal being produced and it becoming available in its knowledge base.
- We have only this linkresolver so I do not have anything to compare to.
- Maintenance is high.
- Prior to going live with SFX v.4, we had a lot of problems with data not being current, monthly updates not being sufficient, etc. But with v.4 we now have weekly updates and this has led to greater functionality and ease of use.
- The KB should be improved: there are some journal packages where journals should be deleted because they are not part anymore of the full text package. In other cases, it can take a long time before new important journals joining a package (according to the publisher) are really included in the official KB package. - Clients can show and share their interest for adding new resources in the KB, but the process shoudl be improved (low and not easy to find what is interesting for others)
- The link resolver is great, but sometimes it's a pain having to maintain a separate knowledge base.
- the knowledge base is not sufficiently updated
- As with any link resolver, the knowledge base is dependent upon information from vendors. This isn't always as timely and accurate as it should be. Weekly updates are better than monthly, but an environment supporting continuous updates would be optimal. We use a regionally hosted (they update the software and the KB), but locally managed instance of SFX. The hosting will end in June 2013; see migration note below.
- KB updates are erratic. Article leve linking is sometimes not possible with certain vendors even though it is possible with Serials Solutions.
- We are generally satisfied with SFX. Updates to the KB data could be done more quickly and the accuracy of that data could be improved. Communication of target name changes and publisher updates through release notes, etc. could also be better.
- Knowledgebase maintenance seems to be slipping a bit. Used to be excellent.
- KB updates are now weekly but errors seem to be occuring with greater regularity. Each update seems to break more than it fixes. We no longer seem to be ale to trust things to keep working.
- They are slow in their day to day updates. With our requests to add new resources they are slow as well
- Overall, I am very satisfied with the link resolver. Sometimes there are errors with the knowledge base and the response time for the changes can be slow which is why I did not rate this at a level 9.
- Keeping the link resolver updated and accurate has become increasingly difficult over time with shifts in coverage, vendors, etc.
- Works well for the most part with subscribed content, though not uniform when resolving to open access content (doesn't resolve to article level). Knowledge base is sufficient as well.
- We are a hosted site which means that we do not maintain our own server or apply weekly updates. That is taken care of by Ex Libris. We do, however, have to monitor the updates and make changes based on our own holdings.
- Sometimes a bit slow fixing KB problems; reports are good.

- Some recent data quality issues with titles and coverage. We would like to spend less time maintaining titles in the KB.
- Missing portfolios for previous titles (former ISSNs).
- Management tools are easy to use, the update (4 times for month) of the knowledge base is permanent and changes are easy to apply. It allows comparisons between the targets of different providers of procurement decisions easier. An additional problem is the recovery of e-book, the description of these digital objects is very poor. Technical support is assumed by Ex Libris and the Spanish distributor which creates a disadvantage in the early resolution of the difficulties
- Weekly updates help resolve issues more quickly than the previous monthly schedule.
- feels more technically involved than I feel we need to be (unfriendly target names with underscores and cryptic names, editing perl code lines for logic)
- Aging interface, poor management tools
- We wouldn't manage without the SFX, but it could be much improved, both in usability for the users and for the managers.
- KnowledgeBase contains errors although IMO this is mainly due to incorrect data supplied by Publishers
- Menu and targets may easily be locally modified in the admin interface, which is good. A large and active user community gives input to Ex Libris. Some support issues take a long time and development is a bit slow. It should for example not be necessary to vote for new targets.
- SFX is managed by staff in three different departments. Hence the delay in creating the responses to this survey.
- despite cleanup of our holdings, still has numerous errors
- SFX is generally reliable and has an open architecture which provides us with flexibility to customize its services. However, we frequently experience problems with the knowledgebase not being up to date with the latest publisher changes and inaccuracies for many aggregators.
- One of the most important tool to find articles after a recherche in a Database including PrimoCentral
- many french resources are missing in the knowledge base.
- it just works!
- Mostly it just works.
- It is very useful to be able to send updates and changes from inside of the SFX administration.
- We appreciate the ability to add local records.
- the link resolver does exactly what it's supposed to do; the knowledge base is poor
- SFX has enabled us to present a far larger universe of online resources to our patrons than was previously possible.
- We feel like ExLibris needs better communications between publishers and customers. For instance, we want to know what they are doing about platform migrations without having to ask.
- Overall, we are satisfied with the performance of SFX and the quality of the KB.
- Effectiveness has improved with version 4 with more frequent updates.

- Overall good performance. Creating custom parsers to enable efficient access (fewer clicks) is occasionally required and is somewhat difficult - requires getting at 2-3 library staff to work on aspects of task. Some difficulty in linking to newspaper-format subscribed electronic content.
- I think most of the knowledge base problems stem from a lack of communication between the journal/database vendors & publishers and Ex Libris, as well as a lack of understanding of library technology on the publisher's side.

### **SFX Functionality Comments**

- Using SFX is very simple, but for some users it is still problematic. But mostly it is because of low information literacy of our users.
- Not very user friendly via Metalib access. Seemingly unable to link patron directly to resource required.
- easy to use interface slow response times though
- Could do a better job linking to opac holdings on a single screen. As it is, it does the job of connecting Electronic holdings. Recently, we have used umlaut as the presentation layer because of its ability to leverage linked data.
- Provided they are using our services, it is very effective. But it is not always available within certain resources and general internet use by students bypasses the service. Mobile device use is a current problem as the menu does not adapt and is unreadable and even unusable.
- As Head of Information Resource Services, I do not have a lot to do with the end user functionality/usability experience. No-one has communicated any great concerns from users to me.
- sometimes the user is linked only to the main page of the journal instead of the specific article
- The link into our library catalog is a bit "clunky".
- consistent, however the links that are supposed to go to specific articles often only go to the journal homepage. this could be a local implementation problem
- Students really like it!
- Drilling down to issue and page especially of newspapers is difficult. Documentation for changing or improving this configuration is cryptic to the average librarian.
- Not always consistent /stable between different browsers. It's sometimes hard for end users to understand what went wrong when linking is not successful, error messages could be improved.
- When it works it's beautiful and tremendously helpful.
- We do not host the service, nor manage Linux based functions, which is a great disadvantage when it comes to customizing parsers, menus etc. A more user friendly front end for these back end functions would make this a much better product for the Linux adverse.
- It hasn't solved the problem of meeting abstracts, which often don't resolve correctly
- A number of the problems for users are caused by the quality information not in the control of a link resolver, e.g., 1) inaccurate OpenURLs created in databases, e.g., mis-identifying the genre, books as genre=article, chapters as genre=book, etc. or 2) not yet registered DOIs or incorrect DOIs.

- Good for fulltext access, but not easy to promote other use, especially Endnote export.
- SFX suffers from all the same problems faced by other providers - incomplete/incorrect citation information, but data from publishers, etc., but this isn't a fault of SFX in particular.
- When the KB data is correct it can work quite seamlessly. But it's only as effective as the data put in.
- Users find the link resolver relatively easy to use. They also appreciate the A-Z list and the many options that the knowledge base provides.
- Sometimes we have problems with certain platforms not working well with article level linking. Patrons have become accustomed to article level linking, so when they are only brought to the title level and have to navigate to the specific article it can be frustrating.
- Our users want to go directly to the full-text; they don't want to deal with a menu unless direct access fails for some reason. Also, some users like pop-up windows, some don't; this should be set by the user and not by the system.
- End users report no problems with SFX functionality and usability. SFX display logic enables us to push appropriate e-resources to end users.
- I am less than thrilled over the fact that SFX can display different things depending on what is clicked in the A-Z list (title vs. SFX button). The screen that appears when an exact match is not found has proven confusing to users -- it looks different and doesn't really explain what happened. The bX service isn't integrated with the SFX menu screen very well. It's a nice idea, but one that could use improvement. Users have been confused when recommendations appear.
- we have tailored the sort order of the providers to preference publishers over aggregator databases
- This application has been remarkably robust over the years.
- Accessibility could be improved
- If there's a working entry in the knowledge base, it works okay. We are on the SFX TotalCare plan, and not happy with the inflexibility of the link resolver pages. Specifically, we lack access to the HTML and cannot implement our university template on those pages. We can provide banners, but SFX places them (badly). Currently they're using three separate banners for us, one ancient, one broken, and one correct. Email if you want details.
- Lately we have been seeing more knowledge base linking errors. I'm not sure if this is due to the implementation of a discovery tool which is providing citations from vendors we don't usually use (perhaps inconsistent or incorrect citation information which causes the linking error) or if it is due to SFX moving to a weekly update schedule with SFX 4.
- We do not rely on the SFX menu as it is "out of the box" - we have done a fair amount of redesigning to make the menu options as clear as possible to our users so they don't have to "think" when they encounter the SFX menu. Some aspects of SFX don't work as well for us, as far as usability is concerned, such as the "multi-object menu". In the absence of a standard identifier, SFX does a title search against its knowledgebase and displays a list of possible matches. The menu as it is setup does not make sense to our users. We are disabling this menu and relying on the link to interlibrary loan to take care of our users in these cases.

- Because of the nature of the open URL calls some databases, such as Lexis Nexis Academic have troubled interactions with SFX. Often the user is required to retype. This is LNA problem more so the SFXs.
- Overall the link resolver performs well.
- It's not always clear to an end user when the link fails, why it failed. Often it's due to the source of the link having a citation that is incorrect, missing information or containing informaiton that cannot be correctly translateted by the resolver, such as supplemental issue citations. Also, it could be because the end reciever's website cannot use an openURL link, dumping the user at a page where the user could browse for the information they want, but they don't understand that the need to. More User Training is needed on what the limitations of full text link resolvers are.
- I think it work fine for the end user. It is very staff intensive job to keep on top of manually checking links before they become available to the end user and end users regularly spot out of date links because we don't have the staff resources to maintain and check all our e-journal links.
- We are part of the Libris consortium and do not have access to all parts of the Linkresolver, I am afraid of [...] staff and therefore I am not sure what functionality is available for us. There is a problem being part of a consortium that we do not have direct contact to the provider.
- Full text linking can be problematic.
- Works well. The only issue is that users may not understand the purpose of the link resolver and click aimlessly, trying to get what they want.
- it is confusing for the users that too many windows are opened and that you have to click several times to get the fulltext. It is too easy to get lost
- Far too many clicks to arrive at FT content - students give up or try a browser. Needs to be more seemless/transparent to the end user. This may be more of a critcism of the concept rather than F-D's version.
- A link resolver is only as good as the OpenURL compliance of source and target platforms. In most cases, problems arise from inaccurate or non-compliant citation metadata at the source or target, rather than from the linking parses used by SFX.
- SFX allows considerable customization for the library that wants to get into it. Generally, the usability is fine out of the box, but depends on library choices.
- SFX is a link resolver only a librarian could love. I see more problems encountered here than I ever did with Serials Solutions.
- Our users seem to be satisfied with the functionality and usability of the SFX service.
- Has made amazing changes in user access to fulltext articles. Less helpful for ebooks and other types of information. There is no other way we could have easily provided access to aggregator content. And our EJournal list is automatic. And we get bib records which include all the aggregators without deduping.
- Overall the link resolver works very well at connecting users with the appropriate copy. Sometimes there are doi problems outside of the control of the link resolver that cause errors.

- End users often reach a dead-end either by expecting to find full-text when there is none or not being led to full-text when it is there. Of course it works much of the time but the errors are glaring when they happen.
- It should work ideally when the user doesn't even know it's there, but the appearance of SFX icons can present confusion to end-users.
- Linking at journal title rather than at article level can be a bit confusing and slow. Supplier often slow to respond to requests for information or to fix.
- Some publisher/vendors do not have article level linking available, which can be problematic when linking.
- This is one of the library's core services. We do not have Direct Link enabled, so may be making it more complex than it needs to be for the majority of users.
- Not very user friendly menus.
- As before we have not had another link solver, a priori our opinion is favorable with respect to streamlining access to electronic resources. The login window is customizable so it meets our requirements and consider it quite easy to use by the end user. Except for the recovery of e-books, due to poor description of these digital objects and the absence of a recovery list AZ
- Users often report problems linking to resources.
- It is not very intuitive, we have to show most users how to get to the full text.
- Hard to say how much false negatives/positives there are, but we believe that most links directs correctly. Some sources and targets are problematic (e.g. ProQuest). Some material types may also be difficult and need changes in the source provider metadata setup. The menu is easy to use. Public names and may be modified.
- It is somewhat difficult to rank the effectiveness of the link resolver because we tend to hear from people when they have problems rather than when they have successes. The links sometimes don't work, but often this is not related to the link resolver itself, but instead is related to incomplete metadata in the source database, or other reasons. Also, the full text content in aggregated databases often changes with no notice to individual libraries. While the Knowledge base is changed on a timely basis, the information does not come into the knowledge base for a while, thus leading to links that do not work. The library has made decisions about the display in order to make it easy for users to navigate. However, there are still problems for users. For example, sometimes they don't understand phrases such as "Available from 1996 volume: 30 issue: 1" Sometimes users are confused by multiple database displays on SFX screens.
- I tell students to think of FindIT/SFX like a "crazy friend" who may be correct sometimes, but is often wrong.
- SFX is relatively easy to customize and we've been able to set up our "menus" to use simple language and have a clean look, in order to improve usability. However, one thing that other link resolvers (e.g. 360 Link) do which SFX does not do well is warn people whether they will be linking to the article level or to some other level of access.
- Depending mostly on the Database information sometimes link resolving fails - and a lot of end user did not respond such failure, so there is no possibility to check and correct this
- Users have difficulty with the multiple object menu, displayed when SFX has multiple items with same title and not sure which one to select.

- SFX can provide very accurate linking to the full-text article
- Students and faculty very happy with quick access to full text via sfx. We use the a-z list function as our basic index to print and online journals. That works well.
- The system could be less clunky with fewer click throughs
- patrons have to get used to the display. it tries to cram too much onto one screen. we've chosen to hide a lot of functionality that might be useful but just overwhelms users.
- The menu is not as customizable as could be wished.
- After some local changes of the advances template in SFX, we feel that our SFX provides links to Full Text in a very effective manner.
- It would be nice to have more article-level linking when you have a full citation. More are added every update, but it's hard for the patrons to find the article they're seeking when they land on a journal homepage.
- Need better handling of supplements and any volume, issue, part, or page containing a letter.

#### *SFX Knowledge Base Comments*

- Some electronic resources are not included due to contract
- Updates are slow and can be delayed for months at a time. The A-Z does not list the e-books available to our users.
- Improving, but still slow. Sadly, we still wait for biweekly updates. Typically additions, rather than deletions or updates, are paid more attention to. Ebook collections, where titles are the most volatile, are the worst. We typically are creating local objects and wait for ex libris to catch up a month later. Some support incidents, particularly with dissertations and theses, are over 1year old.
- It seems to vary. Sometimes it's a few days. With other incidents I am still waiting after several months.
- Usually takes at least 2 months for the version that we are on, but will hopefully be quicker when we upgrade to the latest version
- Sometimes it takes several weeks before you can find new e-books in the knowledge base. The knowledge base should be updated more frequently.
- Dislike the pivotal system where you have to log in to get access to updates rather than be contacted by email. Onus is on the customer to find out progress
- See above. Slow response time to changes from vendors
- Here again, this is hard to assess due to our local knowledge base management. It seems to take a long time considering the cost of the resources we are trying to make accessible.
- I am not sure how quickly errors are usually fixed in the knowledgebase, but we do have the option to override the settings for an individual title if it takes too long. This is problematic because doing so will also override future updates, so we have to track any overrides we feel are needed and the systematically check to see if the problems are fixed so the overrides can be removed.
- Sometimes difficulties in communication between the link resolver vendor (Ex Libris) and publishers when they change or alter platforms This results in delays, incomplete data and problems accessing resources. A recent case was the OmniFile Full Text Select Target, which wasn't available until two weeks after the old platform was discontinued.

- Updates and changes are fairly timely. Slower for less popular items/smaller vendors. Accuracy - depends on how the information is pushed from the vendor, many of the issues result from how the information is pushed forward.
- Our library doesn't have an ERMS and our open url resolver SFX is auxiliary to our main serials management which is done via Serial Solutions. As I only encounter the errors between the SFX knowledge base and Serials Solution I may have an incorrect bias to believe that our knowledge base incorrectly represents much of our electronic resources. Our SFX knowledge base does not have as granular of access information as our serials solution information.
- We originally set SFX up only as a resolver, and have only recently migrated to it as a data source for our A to Z list (in preparation for our recent adoption of Primo) Our demands for KB completeness and accuracy have greatly increased as a consequence. Compared to other data sources we have used (Serials Solutions, even the publishers themselves ) we find the SFX KB to be about average in accuracy. They have been rather slow in keeping with vendor platform changes though. They were quite late on the Wilson to EBSCO change, and didn't deal at all well with the New ProQuest Platform.
- The ebook KB is not frequently updated: for example we still have a lot of c2011 springer ebooks not activated. Free journals often don't show embargos
- We provide more access for our ebook resources via vendor loads in the catalog than by activation of these resources in the link resolver.
- Adding new titles is a straightforward process, but we have difficulties with title history management (adding former title, followed by, proceeded by, etc.). Ex Libris often refuse this kind of additions in its KB.
- Most of our resources are available in the KB, but local customizations are oftentimes necessary. And it commonly is because of inaccuracies in the KB. Waiting weeks for errors to be corrected in the KB is just not reasonable. When something is broken, you need it fixed immediately. The problem is, to get an immediate fix you have to make manual edits. Then once the Ex Libris fix eventually comes through, conflicts can crop up with your manual edits.
- Some of the large aggregator journal lists seem to be less frequently updated than desirable, possibly the fault of the aggregators as opposed to the link resolver vendor.
- Recent changes to EBSCOhost Wilson databases seemed to take longer than expected to be updated in the KB.
- I would appreciate a faster turnaround, however, we do have the ability to make changes in the KB to fix problems ourselves so we usually just take care of the problem and report it so that other libraries can benefit.
- Regular updates to the KB are done in a very timely manner. Serious issues are handled well. Adding or changing individual titles, smaller, less widespread packages and less serious issues can take more time to resolve.
- The knowledgebase doesn't accurately reflect/support all e-book platforms. The strength of the knowledgebase really is ejournals. ILS vendors still need to work more closely with content providers when content providers are making platform/interface changes. There have been many instances when these types of changes are made that openURLs are broken in the process.

- For the most part, the KB contains the journals that we subscribe to, with only a few titles that are not included (usually free ones). They are usually added by the next update, although there is a wish that they could be added faster.
- The SFX community model of contributing to the KB optimises completeness and accuracy of the KB.
- I am aware of a few discrepancies have been identified which I need to investigate.
- There are modeling differences between the SFX knowledge base and [...] cataloging. [...] wants one record for each title with the appropriate years and SFX wants to create 'relations' in the knowledge base. Since we can add the earlier titles we can make the knowledge base match the cataloging.
- These folks have the best customer service in the industry.
- Promptness varies considerably. Minor errors can be fixed very quickly but major problems have been ignored for months. There has been a recent spate of correct holdings data being overwritten by incorrect holdings (eg JSTOR start dates being changed from vol 1 no 1 to vol 1 no 4 - as if vendor processes are mixing up old and new start dates?). Weekly updates were supposed to speed up currency but it took five weeks for a vendor URL change to be reflected in the knowledge base (Liebert). Holdings data for free targets needs improving (too few include embargo periods)
- Responses to problems seem slow.
- Many are corrected quickly and added to the next available weekly update, but sometimes I get stuck - I report the problem to the link resolver vendor (ExLibris) who tells me that it's an automatic feed from the content vendor and needs to be reported to them. I report the problem to the content vendor and they often tell me to report the problem to my link resolver vendor.
- Some of the inaccuracy is the vendor's fault. Version 4 is much better in regards to promptness. Individual errors take weeks or months to resolve.
- Responses are never consistent as far as response time - sometimes they are prompt in responding to my messages; other times they are very slow. Depending on the eresource package (aggregator vs non-aggregator), promptness of updates varies based on when Ex Libris gets information from vendors regarding changes to their products. Getting new resources added to the knowledge takes a while, longer than I think it should - Ex Libris prioritizes based on the number of customers requesting a particular resource. This can be frustrating if there is a new resource that not many other libraries are also requesting updates for - it takes months for these types of resources to be added.
- SFX 4 is now updated weekly
- I think Ex Libris does the best it can with all the data changes happening. Vendors are constantly changing the access to periodicals in their databases which creates a cascade of events that lead to SFX being updated. I think this is sometimes a bit slow, on Ex Libris' and the vendors' parts.
- Generally aggregated packages are fine there are issues with start/stop dates and embargos that occur but typically the problems are minor and corrected quickly. It is the data for publisher journal packages, such as Oxford, Sage or Wiley that I find so problematic. SFX creates sources that will serve all their customers rather than creating specific sources that fit the packages the publisher has sold. It would work better if they

could work with vendors to have more accurate coverage and then permit users to filter by specific package type.

- There is often a delay from when a new product or interface is introduced and when it is available on the knowledge base.
- In general the KB is fairly accurate and the vendor responds well to actual errors in information. However, sometimes there is a bit of a "fight" when it comes to reporting errors in databases where the information is provided by a vendor or publisher and is just loaded by the link resolver vendor. Often the link resolver vendor does not want to correct the information provided by the publisher, even when what is in the knowledge base is incorrect and the information actually in the database is different than what the publisher said in its monthly updates. Often the link resolver vendor wants us to contact the publisher of the database and ask them to correct the updates sent to the link resolver vendor, which can take months to actually get submitted back to the link resolver.
- Corrections usually happen reasonable promptly. The holdings information is often a one size fits all for journal titles within a specific package so we have to do a lot of editing of this information to reflect local access for our institution. Free e-journal information is not very good quality.
- All our electronic journals are available in the Knowledge base. Updates are ok.
- Our consortium's Info Tech Department (at another campus) handles communication with Ex Libris re: SFX, so we cannot report on direct knowledge of the vendor's response accuracy and promptness. But it seems to not always be as quick as we'd prefer. We have limited configuration capability of our instance of SFX, but most issues go through ITD to Ex Libris.
- Important French-speaking resources are missing in the KB. - Many law resources are missing - Promptness for correcting errors has been highly improved on SFX v4
- When fixed in SFX admin, updated the next day.
- One ebook example: for ebrary there is a discrepancy of 8000 titles. Even though a lot of people complain on this nothing happens
- There has been recent dissatisfaction regarding the quality of data maintenance in the KB, because recent updates overwrote accurate holdings information with inaccurate holdings information for a number of large e-journal packages (i.e. JSTOR). On the other hand, upgrading from v3 to v4 yields weekly (rather than monthly) KB updates, so the data should be more timely and accurate than before (in theory). See SFXDiscuss listserv for more details.
- Expansion of eBook management and access needs to be addressed.
- Ex Libris takes several days--sometimes weeks to respond to to KB issues.
- Our institution tends to order new resources very soon after (or before) they are released, so often we need to wait for them to be added to the SFX KB. The rate of promptness seems to be directly related to outcry from customers (on the listserv, for example.) Less popular problems are often not dealt with very quickly.
- The KB is very good about ejournal titles, much less complete about ebooks. But the SFX vendor is dependent on eresource vendors who do not supply the correct information. Many problems lately with accuracy of updates to date thresholds. I don't believe this is the resolver-vendor's fault.

- Weeks after reporting problems they still have a status of '1st line analysis'. Even high priority problems don't get a response for several days. Their customer listserv seems a better source of solutions than their own support staff.
- We like to see SFX KB get more comprehensive with ebooks. Also, like to see updates get reflected quickly (for example, on platform changes, vendor/publisher changes)
- We just moved from a monthly update schedule (where the updates from the vendor ran a few months behind) to a weekly update schedule so we hope to see improvement in the timeliness of corrections.
- We regularly experience problems with packages that have been custom-created by consortia. This is probably going to be an issue with any control knowledge base, but it represents a disconnect with many libraries' acquisition model.
- Updates are consistently applied, though it's hard to gauge the kb accuracy among the portfolios. The main problem is indexing through Primo Central; numerous metadata errors can interfere with the display of SFX - they often don't appear complementary for the end user, despite deduping/FRBR-ization. The other problem is that not all content providers correctly configure their content for link resolving. Gale Cengage does a poor job of configuring their databases, in particular. For SFX to work optimally, there has to be more communication with Ex Libris.
- We often find that we're caught in the middle between the information Ex Libris indicates a given vendor has supplied (titles and dates of coverage) and what the vendor's own site indicates for full text coverage. With SFX version 4, Ex Libris has moved from monthly to weekly updates--this is a big improvement. We do find, however, when we report problems in what we think is a clear manner, the initial question is sometimes completely misunderstood (a language issue?); this, in turn, slows the response
- Perhaps sometimes not very good at listening to its collective customer base.
- We have a hosted SFX site with updates tested and implemented weekly.
- Simple adds and deletes for non-aggregators get quick responses. Aggregating databases (EBSCO, ProQuest, Gale, etc.) are sources of ongoing frustration. The vendors do not supply accurate title lists, but customer feedback doesn't seem to be well integrated into the workflow.
- Accuracy problems occur mainly with aggregators dbs
- Promptness of updates could be better.
- We are generally satisfied, although it is improved support for help in troubleshooting
- Inaccuracies seem to stem from publishers not properly updating holdings rather than from SFX issues.
- Changes to knowledgebase can take weeks where users expect them in hours or less.
- Still many eJournals and even more eBooks not in KnowledgeBase Changes can take several weeks to implement
- SFX is comprehensive regarding major international e-journal publishers but less for Nordic and other regional publishers. E-books comprehensiveness varies. Some are seldom updated (e.g. Books 24x7). We have also noticed that content suddenly is updated in another subtarget than expected. Databases are not covered.
- Considering the growth of electronic resources and databases, Ex Libris does very well in keeping up with the changes both in titles and in holdings.

- As mentioned earlier, we frequently experience problems with the knowledgebase not being up to date with the latest publisher changes and inaccuracies for many aggregators. E-books are something we'd like to see updated more quickly.
- Some national/language depending material is sometimes out of the KB, often for reasons coming from the vendors and not from the KB-Team. there is no good system of communication between users, vendors and KB-Team.
- It takes a long time before new packages info or corrections to targets are implemented
- very very slow on French resources (sometimes about 2 years), too slow on non-anglophone resources
- normally 2 updates per month, the knowledge base coverage is catching up pretty fast
- Accuracy depends upon what publishers provide. I have concern about vendors who operate their own open-url service. (Ebsco) Are they making their content available to sfx in a timely manner?
- Common titles, such as newspapers, are not well handled. The knowledge base is too US focused.
- Lacking some of the Swedish/Nordic material. Linking deficiencies regarding "previous" titles.
- it's often hard to tell whether the error is on the part of the database vendor or the link resolver vendor, and they always point fingers at each other. we have done occasional comparisons with other knowledge base providers and have found that SFX frequently has incorrect information that is correct in other knowledge bases. promptness in correcting errors is unheard of! the updates of the wilson-to-ebsco data was a fiasco for sfx although apparently not for other knowledge base providers.
- Title changes are perennially problematic; earlier titles are often hidden (by vendors, and consequently by SFX), so that citations to them fail to find available fulltext. Updates are too large to review thoroughly, and sometimes contain unexplained changes that adversely affect our activations. URL checking is not regularly done for all targets. The problem reporting system is clunky. Responses to more complex problems are sometimes slow, and sometimes unsatisfactory.
- With SFX3, the updates may take 2-3 months to be implemented by us because there are only monthly updates. In SFX4, there are weekly updates, so the time lag looks more like 2-3 weeks, which we would consider excellent responsiveness.
- Ebooks and monos are being added, the accuracy has improved. Ex Libris has moved to more frequent knowledge base updates (monthly to weekly) and the vendor has a good problem reporting system in place.
- This has greatly improved with the current version of SFX.
- Need better documentation about differences among targets to select most appropriate ones. Need more transparency about how updates are made. Need less blind acceptance of vendors' data. Sometimes it's pretty awful.

### *SFX Migration Comments*

- [LinkSolver > SFX] The change was helpful and necessary in context with other new products from ExLibris (MetaLIB and PRIMO) that we implemented together in a new Austrian consortium.
- [360 Link > SFX] Still in process
- We recently explored the possibility of moving to EBSCO Linksource but abandoned the project just prior to launch because of poor customer service and lack of functionality in the resolver.
- [ArticleLinker > SFX] SFX was better value for money and had a better knowledge base
- [360 Link > SFX] We left 360 merely to save money (SFX was part of a package). Given my limited experience with SFX and 360, I would rate 360 as somewhat better, but SFX is certainly adequate for our needs.
- [local development > SFX] SFX was purchased at the same time as ALEPH. The [...] locally written link resolve, which was part of the locally written [...], was migrated to SFX. Since the knowledge base models were similar the migration was relatively straight forward. This was in the early days of link resolvers so we were able to share a lot of linking information with Ex Libris
- [LinkSolver > SFX] We chose not to migrate data from Ovid's LinkSolver because we were unable to activate all our subscriptions in the LinkSolver database. We had many problems matching our basket deals with appropriate targets in SFX. However, SFX is a much better product than LinkSolver
- [LinkFinderPlus > SFX] Change from LinkFinderPlus to SFX was relatively painless.
- [Gold Rush > SFX] Moved from Gold Rush, a bare bones product, to SFX a much more fully featured product that greatly improved user experience especially when linking to the appropriate copy.
- We'll be migrating to 360 Link for several reasons. The knowledgebase is more reliable and since everyone in our consortium [...] already uses Serials Solutions Resource Manager for ERM, there is a case for efficiency in maintaining a single knowledgebase. Having two has caused problems when they get out of sync. We also feel we can customize the interface, although this is admittedly not as easy as with SFX, which is more open. 360 Link has an API which we're beginning to investigate.
- [WebBridge > SFX] we shifted to use SFX in preparation for the Primo implementation.
- Comment regarding upcoming change; I expect a change as part of my library's move to a consortium management system in the next two years. Resolver will be determined by this process.

### **EBSCO**

#### *EBSCO LinkSource General Comments*

- Most of the time it works ok, but lately we have seen an increase in the system telling users we do not have access to articles online when we do.
- Ebsco has the ability to correct or add titles to the AtoZ list immediately rather than waiting for a monthly update to do it. The functionality of the knowledge base is straightforward , but not the link resolver.

- We have run into problems with incorrect data from publishers and slow response time on fixing the information. Going through Ebsco who goes through publisher can sometimes be a challenge with multiple people involved. Also Ebsco in most cases can't access publisher product that there is problems with to check on title or bad link problems.
- Some behavior is quirky, and it may confuse users. Mostly, however, it works seamlessly.
- Entirely functional for what we're asking it to do.
- Most links work most of the time. EBSCO is quick to fix links that are broken. Some links cannot be fixed or are not reliable from other vendors such as some of our products subscribed through our consortium LIRN or from Google Scholar.
- Overall, I think the linking is good, but there are some linking errors that make me wonder how accurate the monthly EBSCO tracking program works that runs against our holdings.
- Not all of my online titles come in the vendor packages listed vs. the publisher's website. I wish that more often there was an option to add titles via vendor ad hoc.
- Out of the box LinkSource only works moderately well, but with careful monitoring and updating of their custom links functionality it can be very high quality.
- The EBSCO Linksource consistently doesn't link to content from Gale, our other major database provider. It is very frustrating.
- difficult to administer, technical support not good
- The administration side is not easy to use or navigate, which makes it difficult to set up properly. THis might account for some of the problems on the user side.
- The link resolver for Ebscohost is working really well. We are able to get from Ebscohost platform database journals to our ejournals that we also buy from Ebsco Subscription Services. These are seamless and we are able to get all our ejournals to be used as well as our databases.
- Overall works really well, but I wish the ILL processes were a bit smoother.
- Extensive knowledge base.
- We had a lot of difficulty getting it set up correctly at first and still, 7 months later are still working with EBSCO Customer service to resolve some of the problems we have been having with it. In terms of the knowledge base, besides the EBSCO support website, I am not aware of a knowledge base specific to Linksource.
- Set up was a nightmare. There were errors at both ends.
- not perfect, but it does the job.
- As the integration with EBSCOnet and EBSCO's ERM has progressed, some strange things seem to appear in our knowledgebase.
- Knowledge base accurate enough, though inaccuracies take a long time to be resolved. Administrative tools for link resolver are very complicated. Service unreliable and prone to outages.
- Periodically you have to correct or remove faulty links. Sometimes this requires assistance from the vendor, but I suspect this is the case with other link resolvers as well. Only a couple of times have we not found what we are looking for in the knowledge base, but in this instances Ebsco quickly added the requested resources.
- Overall it does a good job and is more cost effective than our last one. I wish it did a better job with identifying open access journals.
- Clunky admin interface and no real alerts about when new subscriptions are added.

- The knowledge base is completed regularly, so the resolver link is updated in the same time.

#### ***EBSCO LinkSource Functionality Comments***

- Often have to send over details to customer support - but they do respond quickly in adding titles in.
- It has been huge help in preventing confusion on the part of students and faculty. Now when searching a database they are able to click on the citation and find out whether we have full-text all in one step.
- There are some issues connecting to the best record in OCLC, but I am not sure that is the Link Resolver or WorldCat's issue.
- Great time saving tool. The only frustration is when the links fail to connect to the full text resource (happens occasionally). Usually it is because the link or resource coverage provided from some vendors are not complete or up to date.
- Very good to the end user, easy to understand.
- Any failing in this area has more to do with the target platform failing to be properly OpenURL compliant.
- Very confusing to users and a waste of time when so many Check LinkSource links end up with no full-text.
- Transactions are usually successful, but the overall integration into other tools (like discovery) is clunky. A typical request opens 3 browser windows, cluttering up the display and making subsequent transactions confusing (users may not realize that subsequent requests are loading in the existing LinkSource window). LinkSource is still pretty Web 1.0 from a usability/UI perspective.
- packages are unclear, cumbersome to edit
- It does not always work well with other vendors like ProQuest for example. It shows it as available but leads to an error message from ProQuest, which is frustrating for the user.
- The link resolver goes the extra mile to resolve to the actual article. When you are in the Ebscohost platform you can resolve down to the ejournal and the actual article or be led to the ILL screen if we do not have access to the full text. It also will resolve to another database if it is in another database we own.
- Doesn't always link directly into the article.
- Good usability, clean design and functionality.
- It works well when it does connect to the appropriate resources but doesn't always connect correctly for all of our journals and resources.
- I wish there were a way to link our print holdings
- doesn't work well with Gale databases. Frequently get an error message saying document cannot be found.
- Our students have become so spoiled, they no longer know how to manually find the content if necessary.
- It sometimes takes many clicks to reach articles, and every now and then you stumble over bad links or links to articles you actually don't have access to, but overall the implementation of Linksource has made it so much easier for everyone to find and read journal articles.

- The users meet some difficulties of use of the link resolver, but after a demonstration it is a functional and estimated tool.

#### ***EBSCO LinkSource Knowledge Base Comments***

- Estimate 95% accurately reflect our holdings - odd titles missed off or holdings not correct, but when asked for corrections, usually done within a couple of days.
- Ebsco has an irritating habit of showing overall years available for titles, i.e. not separating out backfile or archival access from that available with a current subscription. This can create a lot of work correcting individual titles.
- The more updates the better because the content is always changing.
- Not sure who to report issues to. Not always sure when the knowledge base is updated
- The knowledge base contains the majority of our electronic resources. There are a few vendors that there is no direct link to each resource. In those few instances, EBSCO provides a link to the home page of the resource if possible. EBSCO works very hard to correct errors as soon as possible and tries to find solutions to linking problems. I have spent considerable time corresponding with tech. support on resolving issues to get as many links as possible in the system. Tech. support is excellent.
- I really don't have any way to tell how often the updates are run (as far as I know). I assume they run the updates monthly.
- The EBSCO knowledge base only reports coverage at the year level in most cases, which can cause problems if your access begins mid year. It also has no way to represent gaps in coverage.
- EBSCO says it has to do with the metadata from Gale, so it isn't getting fixed. (I don't administer the link resolver, so I can't answer the next question)
- Coverage dates for titles that have undergone multiple title/ISBN changes are sometimes problematic and not always fixed when reported. As a result, LinkSource doesn't always find a match when it should, or it finds a match when it shouldn't.
- rarely are things reported to me
- As one would imagine, this Link resolver works well with EBSCO databases and others like Science Direct. It does not seem very accurate when it comes to EBSCO major competitors, such as Gale and ProQuest.
- Ebsco Support is very good. They contact back right away as soon as its resolved. Sometimes I think it may take longer but they get back to me in a short time frame so I am very happy with results. The issue sometimes is that the companies update their urls and do not give them to the companies that service the knowledge bases right away. Librarians usually find out before the companies get a hold of them. They usually appreciate us telling them the new links.
- Knowledge base updates should occur more often. Additions does not seem to be a problem, but updating some of the older packages would vastly improve the knowledge base. Overall technical support could be improved. While some errors are corrected quickly while others are not.
- There was a problem with the information appearing on the ILL request page differing from the search result when using First Search. Got the old back and forth treatment. Ebsco stated its a problem with oclc metadata, oclc didn't figure it out. State is dropping First Search so it doesn't matter.

- no solution has been provided to resolve the type of the problem mentioned above. EBSCO seems to wait Gale to make changes to its index method and does not want to make changes to its product.
- Most problems I encounter are related to managed coverage and incorrect or outdated information supplied by the content provider.
- Good so far
- Sometimes slow to change e-journal links held on different platforms i.e. Atypon to Cambridge Press.
- Updates times vary publisher to publisher. This tends to indicate that vendor responsiveness is the biggest factor in promptness of updates.
- The updates are regular. When a problem of compatibility went back up to the supplier, it intervenes in two days with a first answer, what is fast, and a follow-up is set up when the problem is too complex to be managed in these two days.

#### ***EBSCO LinkSource Migration Comments***

- We are moving to WorldShare Management Services and will have to determine if that knowledge base is better to operate. We will likely keep LinkSource for a while.
- [360 Link > LinkSource] Serials Solutions product sales representatives mis-represent their products and release products before they are functional. They get \$ in their eyes and don't care about customer satisfaction. They talk a good library product but don't deliver. Tech people always have an excuse
- [360 Link > LinkSource] Serials Solutions was getting expensive, and EBSCO offered us a very good deal. Since we have an excellent relationship with EBSCO, and we have many of their databases, as well as EBSCONET (which manages our serials subscriptions) we felt this was a good move on our part.
- [360 Link > LinkSource] Changed solely on price. Did not notice any degradation in the product or company service.
- [360 link > LinkSource] We changed from Serials Solutions to EBSCO in 2009 to cut costs.
- [WorldCat Link Manager > LinkSource] We were forced to change when OCLC announced the end of their support of WCLM. Disappointingly, their announcement of License Manager came much too late in the implementation process for us to consider it as an option. We had already purchased LinkSource from EBSCO. I think OCLC really dropped the ball on this.
- [GoldRush > LinkSource] GoldRush was a little too labor-intensive; although the price was right, the knowledge base required a lot of maintenance and massaging to stay accurate. We could no longer afford the person-hours and inaccuracies.
- [360 Link > LinkSource] cost from reason for moving from SS, I have been quoted better prices lately but need to see the demo before deciding. I am very disappointed in the EBSCO product.
- [360 Core > LinkSource] We are getting close to the same number of hits on the Ebscohost A to Z as we are on the SerialsSolutions product. We have more hits on full text than before because we are now able to link our ejournal access through Linksource too. This is a boon to able able to offer all the tools and means to get to an article.
- [360 Link > LinkSource] Primarily a cost-based decision as well as the fact that our print jobber is Ebsco.

- [TourRESOLVER > LinkSource] We changed link resolvers last year. We were looking for a product that was continuing to develop with the changing landscape of technology. We also needed a product that could effectively take into consideration our needs for pay per view packages.
- [360 Link > LinkSource] Our current link resolver is more cost effective.

#### ***OCLC WorldCat Local link resolver General Comments***

- For the most part it works fine. However there are times when the database citation information and the full-text citation information don't match and you do not get the proper article.
- PubGet which is now the underlying knowledge base is not yet fully functional which appears to cause problems with accuracy
- We're still working on getting it implemented, so it's hit and miss right now. The resolver works well, but only checks our eJournal collection at the moment, and the knowledge base is not currently accurate.
- We just implemented this at the end of last year. I'm still working on getting it fully functional (adding unique collections etc.).
- The current link resolver is old, limited in its functionality. the new replacement is still being developed while they try to roll it out. Implementation is Chaos. important functions are still missing. Even once they get it working it will be missing substantial functionality and configurability.

#### **OCLC**

#### ***OCLC WorldCat Local link resolver Functionality Comments***

- It is very easy to use. But there is the citations problem stated above which often leads to a different article or to a "can't find" page.
- Links to articles via WorldCat Local do not always resolve successfully which is confusing for users. This is related to how databases are centrally-indexed, and the fact that searching often pulls in links via databases not held by us.
- It's pretty straight-forward.
- As far as the end users are concerned, it works almost seamlessly within our catalog (WorldCat Local). The knowledge base supplies links directly to the article level and students are almost unaware that "something else" is working behind the scenes to allow them that access.
- OCLC's link resolver is not great. But they have the best repository in the world. They link link resolver records to your library holdings. So all ebooks, paper and electronic journals can be managed just in the link resolver not in the library ILS at all. they also have extensive link out to all the open access ebooks via Internet Archive, Hathi trust.

#### ***OCLC WorldCat Local link resolver Knowledge Base Comments***

- If I can't find a collection in the knowledgebase, I can create it with a bit of effort. I have found OCLC to be very prompt whenever I have let them know about a knowledgebase problem.
- See comments above. Updates carried out fairly regularly but it takes a long time to deal with errors which often have to go through an enhancement process

- OCLC isn't very quick in general, and I'm finding that the knowledge base, in particular, is undersupported right now.
- For the majority of our collections, the knowledge base is working properly. I'm having a bit more of an issue with adding rare/unique collections that aren't already in the knowledge base.

#### ***OCLC WorldCat Local link resolver Migration Comments***

- [360Link] I liked 360Link but it was not sustainable budget-wise. I had estimated that I only had about 2 years in the budget to afford it when the opportunity to get a openURL resolver as a part of getting WorldCat Local presented itself. The total cost for adding WorldCat Local and the openURL resolver was less than the cost of 360Link.
- [Sirsi Resolver > OCLC] We previously used Sirsi Resolver but changed to OCLC WorldCatLink Manager when we moved to WorldCat Local as the underlying interface was provided by OCLC.
- [Locally Developed > OCLC] We're currently moving from one broken A-Z list and link resolver to a new, but not yet fully configured and accurate solution. As such, we're not at an excellent stage to reflect on our experiences with the new product, but hope it will serve us well once it is fully implemented.
- [360 Link > OCLC] We recently migrated to OCLC's WMS product for our ILS. With this change we switched from 360 Link to OCLC's link resolver, which is provided at no extra charge outside of what we pay for WMS. The link resolver aspect of WMS & Worldcat Local is still fairly new from what I understand. At this point I am of the opinion that the 360 Link product is superior in regards to customization and completeness/accuracy of data.
- [LinkSource > OCLC] We had Ebsco Link Source for a couple of years, and liked it. Ebsco have the best support in the business. We changed because our regional consortia went to 1Cate via Sirsi, which was then bought up by OCLC. The OCLC link resolver is not as easy to use as the Ebsco. It was more configurable. Now in transition the OCLC resolver is in chaos, but it still gets the job done, and is way cheaper.

#### ***Innovative Interfaces***

##### ***WebBridge General Comments***

- It works fine. The problems derive from the link at the origin, and from limitations of the knowledge base which we import from Serials Solutions. Most of the linking comes from Summon and there have been problems with it.
- knowledge base provided by e-journal record provider not webbridge
- We use Ebsco A-to-Z as the knowledge base for WebBridge. We do some prep of the knowledge base before each load into the WebBridge coverage database using a locally developed Perl script. This allows us to customize the knowledge base to meet our needs better.
- The Knowledge Base is not provided by the same vendor as the Link Resolver (they are Serials Solutions and Innovative respectively).
- The knowledgebase is updated monthly.
- Any Web based resources can be incorporated into WebBridge.
- The knowledge base can be slow to update as companies and databases merge.

- WebBridge requires a great deal of local knowledge and maintenance to work effectively. It is reasonably priced and works well when configured properly, but the configuration is difficult. We use Serials Solutions 360 knowledge base to populate the coverage database used by WebBridge. Data regarding knowledge base below is for Serials Solutions, not III's CASE.
- We have to maintain our own resolver configurations which can be somewhat tricky. However, it's a plus that we don't have to wait for our vendor to fix issues. We like the integration of this product into our web catalog in addition to its use as a resolver. This is a great plus with WebBridge. We load our data from Serials Solutions so I'm going to use that data to answer KB questions (as far as accuracy, promptness, etc.)
- The CASE Knowledge Base was a very poor product, which we received one year 'free' with the transition to iii WebBridge. We went back to Serial Solutions 360 Core as our Knowledge Base, which we are generally happy with. I would give the Link Resolver performance a 9 alone and the CASE Knowledge Base a 1 alone if I could separate these.
- It's very configurable, so anything that's not working well is really our fault. The downside is that it's pretty complicated to administer.
- WebBridge does not come with any knowledgebase. Libraries must not only populate title and holdings data (in our case we purchase data from Solutions), but must also configure ourselves all openURL linking. III offers little by way of support to troubleshoot openURL problems (a customer-contributed wiki) and poor documentation.
- active user community provides support and troubleshooting help
- We must maintain our own knowledge base, which can be cumbersome.
- It is useful to use the ERM system as the knowledgebase as it prevents having to manage the data in more than one place.
- web administration user interface is clunky
- Link resolver adequate but slow updates to the knowledge base.
- We use Serials Solutions as the KB; both work just fine.
- The linking process is complex. Many pieces need to function correctly for it to work properly. Even then, if the initial citation data is faulty the links may not work. So it's hard to generalize about results.
- Setup was not intuitive
- Since spring 2011 we are using Consortial WebBridge. In December 2011, we moved from a single network EBSCO AtoZ site/coverage file to separate AtoZ sites/coverage files for each member.
- We have the original WebBridge, not LR.
- Our knowledge base is from TDNet. We have always found them to be a very good and responsive company. WebBridge's basic set is fairly easy to understand. Troubleshooting can be tricky, but I imagine that's the same for all link resolvers
- I find it a lot harder to work with than the Serials Solutions product I used in a previous job, which was integrated with the knowledge base. With WebBridge, I spend a lot of time updating the knowledge base and have to know a lot more about how it works.
- Difficult for consortiums to use. III's wiki is helpful for setting up Origin and resources profiles. Integration with WebPAC is good.
- Users report problems way too often.

- We use SerialsSolutions to provide coverage data which we then load into our III ERM - that covers
- We use CASE as our knowledge base. CASE is easy to use. The only criticism is the lack of searching by title level in the profiling process, (III is working on an enhancement for this). Loading e-journal and e-book records and links into the knowledge base and catalogue is quick and easy - no spreadsheet manipulation. It is good to have control over the administration section of WebBridge, to format your own resource entries and links, etc. The support of the IUG Webbridge listserv members is excellent and any problems experienced are quickly solved by someone in the group.

### ***WebBridge Functionality Comments***

- Usability seems ok.
- WebBridge gives a good end user experience. It is very configurable so allows you to customise to your institutions requirements.
- We use the original WebBridge product, and this works fairly well. It is no longer updated by III, but meets our needs for now. It would be better if it did not require a sid/rfr\_id for each origin (as some origins don't provide them), but we can usually find a workaround for this problem.
- When we have it set up correctly, it's effective and user-friendly.
- Works best with Cross Ref. Most of the time however that the resolver doesn't work, it's due to issues on the e-resource vendor side, either they are not OpenURL enabled or their data in OpenURLs isn't complete.
- Overall we have been happy with its effectiveness. We did have one problem with DOI openURL strings and iii Release 2011 but it was quickly resolved.
- Effectiveness is based on local ability to determine linking syntax for all providers and platforms and to manage changes to such platforms, with very little vendor support.
- Link failures seem to be due to errors in underlying data, not to the resolver itself.
- Limited customisation of link resolver webpage
- Plenty of setup needs to be done behind the scene. Cannot easily customize the end-user interface unless you understand CSS, web design, and javascript.
- When configured properly, the linking functionality is useful and reliable, but it is difficult and time consuming to configure.
- As for all link resolvers, how well it works depends on how accurate the coverage files are as well as whether or not the resource definitions controlling the links are correctly set up. With each library still fairly new in being responsible for maintaining its affiliated resources in Consortial WebBridge, library staff are still going through a learning curve.
- We've found it hard to get WebBridge to offer links correctly based on our holdings.
- Vendor coverage errors are a problem. Consortium's affiliation selection panel is confusing and cumbersome. Paper holdings not represented.
- This has been very difficult for us to implement and use. Virtually no training was provided. Would not recommend this product.
- End user functionality largely depends on customization and implementation of a variety of processes: data tests, filters, etc.

- CASE data is updated monthly. Some EBSCO databases have a lot of title movement within a particular month which may result in errors. Result panels can be customized to fit particular needs. Pathfinder Pro adds additional functionality from within specific bib record fields or from browse user searches from the OPAC.

### ***WebBridge Knowledge Base Comments***

- Serial Solutions support for Australia-licensed major packages such as Ebsco and Proquest needs improvement. SS is very USA-centric.
- We have to effectively maintain 2 knowledge bases; one with serials solutions and one in Millennium ERM. We only update ERM once a month so it can get out of date.
- We use Serials Solutions to obtain coverage data; and update coverage database twice a month.
- EBSCO has been fairly responsive to problems in the knowledge base, but we have fixed many ourselves.
- Vendors are quite lax in how they report changes and make corrections to the knowledgebase aggregators such as Openly Informatics.
- We have to make the corrections.
- Serials Solutions generally does well with this, but they occasionally seem to have trouble getting sufficient data when platforms change.
- Our knowledge base is through Serials Solutions which we then import into WebBridge.
- Knowledge base contents are acquired from Serials Solutions.
- Serial Solutions don't really seem to correct errors all that quickly but we haven't had that many to report. What is odd is that sometimes there are errors in the data that is fed to us that then disappear in the next feed. It makes me wonder about their internal processes, but there doesn't seem to be much we can do about it from month to month.
- These rankings reflected Serial Solutions Core 360. It is not a perfect product, but fairly accurate and corrected quickly.
- The data we buy from SerialsSolutions. So the knowledgebase is not part of the product, at least for us.
- Preceeding 3 questions are not really applicable as WebBridge does not come with a knowledgebase.
- we maintain our own knowledge base - so we like to think it is correctly promptly!
- We maintain our own knowledge base, and it is difficult to do regular coverage updates because the process takes so long.
- We control much of this ourselves. Having said that, we do derive data from Serials Solutions, and errors have occurred there. These are addressed, but can take some time.
- incomplete knowledge base - many publishers are missing - it would be helpful to have an entry even if just to say this publisher is non-openURL compliant knowledge base (wiki) reliant on community of us
- We use Serials Solution as our KB provider, so it's as good as it gets. They're quite prompt in doing the updates.
- This is a new area for us. Some of the errors have been our own. On the whole support has been good.

- EBSCO is fairly quick to correct their knowledge base. A problem that is not always so easily or quickly resolved is with the actual publishers. We have run into situations where the publishers were slow to provide accurate lists of what was included in their specific packages. And the publishers can also be slow in notifying EBSCO of changes.
- We use Serials Solutions.
- TDNet keep the knowledge base up-to-date and have always been very responsive to our requests.
- We're using EBSCO A-Z, which reflects our holdings pretty accurately as our subs are all through EBSCO anyway.
- No enumeration from journal vendors! Updates incomplete from journal vendor! Errors reported to library staff are fixed within one day. Errors reported to vendors are seldom addressed.
- Getting attention from III to work with us has been problematic
- This refers to SerialsSolutions knowledgebase.
- The few problems we experience are on the publisher/vendor side and not with WebBridge/CASE itself, e.g vendors sometimes do not supply the correct embargo data, some do not provide correct subsets of databases. III staff go the extra mile to obtain the correct data when data problems are reported.

### ***WebBridge Migration Comments***

- [360 Link > WebBridge] Our switch away from Serial Solutions Link 360 was based on cost and made before I came in January 2009. While the ease of setup and use of Link 360 was superior, we have been happy with WebBridge, especially with the upgrade to WebBridge LR all things considered (price, etc.).
- [360 Link > WebBridge] We used Serials Solutions for one year but were not really able to give it a serious testing because of a lack of time.
- We would switch to Serials Solutions if we could afford to do so. Sorry we didn't go with them from the beginning!

### ***Gold Rush***

#### ***Gold Rush General Comments***

- Knowledge Base is not very extensive.
- It does the job fairly well.
- the link resolver works as good as the technology allows, the knowledge base is excellent
- Gold Rush is very basic, but it does what we need it to do and works pretty well. Colorado Alliance is very responsive to questions and problems.

#### ***Gold Rush Functionality Comments***

- Would like the link resolver to be more seamless such that the software is not so visible to the patron between the click and access to the resource.
- we estimate about 15% linker failure rate with about half inherent to the linker itself and half due to vendor issues
- We've found that our users sometimes have difficulty with the interface but on the whole are able to get to what they need.

### ***Gold Rush Knowledge Base Comments***

- It is correct enough of the time to not be too annoying.
- knowledge base is built on vendor information and is only as good as the underlying data, we can correct/update data in our own instance of the knowledge base

### ***Gold Rush Migration Comments***

- [360 Link > Gold Rush] We changed to Gold Rush due to the high cost of Serials Solutions.

## **CUFTS / GODOT**

### ***GODOT General Comments***

- Due to self-implementation of open source, the performance is not quite good for retrieval information.
- Knowledge base is maintained by Simon Fraser University
- True Serials/Godot is a smaller operation and we sometimes need to do our own database set-up because the knowledge is behind or not as robust
- The knowledge base is very good. SFU is extremely responsive with updates and customs lists.
- Great system. Really great technical support team. It would be nice if admin users could export multiple title lists as a single text file. Integrates well with our discovery system (EDS). Can't beat the cost.
- GODOT (the link resolver part) started out as an unmediated interlibrary loan form that automatically searched our ILL partner library print holdings. CUFTS (the knowledgebase) was added in late 2003 which then turned GODOT into a link resolver.
- Open Source, we participate in helping to maintain the knowledge base and enhance it for the community of users (eg open access journals).

### ***GODOT Functionality Comments***

- Link resolver does not work all the time, but works as well as any commercial link resolver I've ever used.
- The idea set-up is a link to the actual article. We are not getting that with all vendors
- The odd time there will be an instance where a journal has incorrect information associated to it, and therefore will not resolve correctly, normally because a manual update on the library's end was required for a record.
- Not super intuitive for our users, I think, but it gets them there.
- it works.
- Hugely customizable even within the provided tools, and of course being open source we can customize further if we need to, or pay SFU staff quite a reasonable fee to customize it for us.

### ***GODOT Knowledge Base Comments***

- The full knowledge base is available for download monthly. Depending on the timing of updates, this can create a delay.
- All knowledge bases suffer from the bad data provided by the e-resource vendors. What sets CUFTS apart is the ease and speed with which corrections and updates are made.

- It seems lists are updated as they are received from vendors. So it is partly up to the vendors to ensure completeness and accuracy of their records.
- GODOT/CUFTS is open source, and created by a group at a university in the same city. They are very responsive to issues we report.
- CUFTS/GODOT is able to respond quite quickly as we only load title lists that are relevant to the needs of our client sites. Knowledgebase and link resolver service providers must deal with large amounts of data from a variety of sources - and often in a variety of formats. We do the best that we can with limited human resources and also try to educate publishers of ejournal content why making their holdings file available publicly and adhering to standard formats helps increase their usage.

#### *GODOT Migration Comments*

- [360 Link > GODOT] We started with Serial Solutions ArticleLinker/360Link. We left the vendor as a budgetary concern. Would still prefer 360Link over our current link resolver.

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Also: Other SFX-related contributions on EL Commons CodeShare