“Chain, chain, chain…”

Implementing linking technologies at the University of Chicago Library

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Symposium: New Developments in Electronic Publishing

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Division of Chemical Information
Orlando, FL, April 8, 2002
What are linking services?
Services predating full-text linking
Vendor/publisher specific linking technologies
Current UC efforts in OpenURL (SFX) linking
Future services and developments?
Background

Researcher identifies a reference and wants to locate a copy of the document. How does that researcher find the needed document?
Researchers have navigated a maze of choices, encountered dead ends, and surmounted various barriers to obtain information. Traditional library services have provided guidance and assistance. Evolving technology and standards are contributing to the development of new tools and services.
Linking services provide options to the researcher to aid in identifying appropriate means of obtaining a document. Services can include links to full-text, searches of online library catalogs, initiation of document delivery, and more.
Desiderata for Linking Technology

<table>
<thead>
<tr>
<th>Easy to implement</th>
<th>Minimize cost</th>
<th>Simple to maintain</th>
<th>Direct links = “appropriate copy” + article level</th>
<th>Easy to use</th>
<th>Comprehensive</th>
<th>Data transferable</th>
</tr>
</thead>
</table>
## Static Electronic Journal Lists

<table>
<thead>
<tr>
<th>Title</th>
<th>Full text coverage</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstracts of Papers (American Chemical Society National Meetings)</td>
<td></td>
<td>Choose Meeting, this one Use Personal Schedule Includes only 1995</td>
</tr>
<tr>
<td>Accounts of Chemical Research</td>
<td>1996-current (v.29-)</td>
<td></td>
</tr>
<tr>
<td>ACS Supporting Information</td>
<td>1995-current</td>
<td>pre-1995 available on microfiche in Creative Commons</td>
</tr>
<tr>
<td>Acta Crystallographica</td>
<td>1948-1967 (v.1-23)</td>
<td>precursor for sections A and B</td>
</tr>
<tr>
<td>Acta Crystallographica Section A: Foundations of Crystallography</td>
<td>1968-current (A24-)</td>
<td>supplementary materials (files) require plugin for other applications</td>
</tr>
<tr>
<td>Acta Crystallographica Section B: Structural Science</td>
<td>1968-current (B24-)</td>
<td>supplementary materials (files) require plugin for other applications</td>
</tr>
<tr>
<td>Acta Crystallographica Section C: Crystal Structure Communications</td>
<td>1983-current (C39-)</td>
<td>supplementary materials (files) require plugin for other applications</td>
</tr>
<tr>
<td>Acta Crystallographica Section D: Biological Crystallography</td>
<td>1993-current (D49-)</td>
<td>supplementary materials (files) require plugin for other applications</td>
</tr>
</tbody>
</table>

- Easy to implement
- Low cost
- Links maintained on multiple pages
- “Appropriate copy” but no link to article level
- Easy to use
- Does not include aggregated titles nor print holdings
- HTML format not suited for other applications

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Online Cataloging Record

- Easy to implement
- Higher staff costs
- Information maintained in one record?
- "Appropriate copy", but no link to article level
- Easy to use? Or not?
- Originally did not include aggregated titles; does includes print holdings
- Not readily transferable to other applications
Both lists of titles and cataloging records require well-defined titles with stable URLs. Many online titles were accessed via aggregator packages (e.g. ProQuest or EbscoHost). Coverage of full text is not predictable, and URLs are not stable.
Based on open source methods (Donna Stevenson at Notre Dame provided the source code UC used for local customization)

Database of journal aggregator information centrally maintained (initially at Yale University)

Local version of jake (localjake) helps determine which aggregator(s) have full text of a particular periodical
A subsequent screen would show which aggregators accessible to local researchers have full text of *Time*
• Easy to implement
• Low cost
• Minimal maintenance, data stored in one location (Yale) – but local customization was “kludgy”
• Not always “appropriate copy”
• Awkward to use
• Never included publisher packages/individual titles (limited to aggregators); did not include print holdings
• Not transferable to other applications
Publishers and vendors developed full-text linking services for their own products, offered some local customization, and pursued agreements with other information providers to link to full-text.

Examples:

- Web of Science / ISI Links
- OVID / Full text and Web Link
- SciFinder Scholar / ChemPort and Your Library
- PubMed / Link Out
- SilverPlatter / SilverLinker
- Beilstein / LitLink
Vendor and Publisher Linking Efforts

- Easy to difficult to implement
- Low cost to high cost
- Minimal maintenance to high maintenance
- "Appropriate copy"...sometimes
- Usually easy to use
- Not transferable to other applications
- Required an agreement between publisher/vendor; generally did not handle aggregated titles; generally did not handle print holdings
ChemPort and “Your Library”


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ChemPort and “Your Library”

Full-text Options

To view all Full-text Options for any single article, click on the Full-text icon.

Document Title

Novel proteinaceous toxins from the box jellyfish (Sea Wasp) Carybdea rastonii

Lethal effect of autolyzate of a jellyfish Aurelia aurita on red-tide flagellates

The first chemical characterization of the jellyfish toxin

Isolation and physiopharmacological properties of three high molecular weight lethal proteins from a coelenterate (Physalia utriculus) venom

Cloning of cDNA for novel hemolytic toxin from jellyfish Carybdea rastonii
ChemPort and “Your Library”

Title: Lethal effect of autolyzate of a jellyfish Aurelia aurita on red-tide flagellates

Journal: Fish. Sci.

Publisher: Japanese Society of Fisheries Science

Full-text Options

- No Additional Fees
- Additional Fee

Check in-house library
Buy an article
Buy paper copy

Help | Options & Pricing

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### Fisheries science (Online)

**Title**: Fisheries science [computer file].

**Coverage as of June 6, 2000**: Vol. 66, no. 1 (Feb. 2000).


**Other entries**: Nihon Suisan Gakkai.

**Frequency**: Four no. a year

**Notes**: Description based on: Vol. 66, no. 1 (Feb. 2000); title from journal information screen (viewed June 6, 2000). Subscription required for access to full text. Electronic version of Fisheries science.

**System requirements**: World Wide Web browser, internet connectivity, and Adobe Acrobat reader.

**Modes of access**: World Wide Web.

**Official journal of the Japanese Society of Fisheries Science**.

**File character**: Electronic journal articles are available in portable document format (PDF). Abstracts are in HTML format.


**URL**: [http://www.blackwell-synergy.com/member/institutions/issueList.asp?journal=fis](http://www.blackwell-synergy.com/member/institutions/issueList.asp?journal=fis) [Click Here]
ChemPort “Your Library” Linking

- Moderately difficult to implement (required programming; approx. 30 lines of python code and a Z39.50 library catalog available)
- Low cost
- Minimal maintenance (uses cataloging record with links and holdings and dynamically generated search)
- “Appropriate copy”
- Usually easy to use (not always consistent in results)
- Not transferable to other applications (nor to other databases)
- Still did not address the problems of aggregators
SFX is a tool that provides dynamically produced links among information resources and services.

Local menu of options:
- Full text A
- Full text B
- Search catalog
- Search PubMed
- Search JCR

Database

SFX server

Publisher A

Aggregator B

UC IPAC

PubMed

Journal Citation Reports
OpenURL and SFX

Source
OpenURL enabled “database” that passes metadata about a target to SFX server

SFX Server
Server at the local level that resolves links and offers a menu of appropriate services, based on local conditions

Target
Services that the SFX server offers (often full text, but other options are available)
Title: Equilibrium structure and effective pair interaction in a quasi-one-dimensional colloid liquid

Journal: Journal of Chemical Physics

Publisher: American Institute of Physics

No Additional Fees

Additional Fee

Help | Options & Pricing
Equilibrium structure and effective pair interaction in a quasi-one-dimensional colloid liquid

Journal of Chemical Physics [0021-9606]
yr: 2002 vol: 116 iss: 7 pg: 3119

SFX is a new service provided by the University of Chicago Library. If you have any questions or comments, please contact us.

Full text available from American Institute of Physics
year: 2002 volume: 116 issue: 7 start page: 3119

Full text available from SwetsnetNavigator
year: 2002 volume: 116 issue: 7 start page: 3119

Search holdings in The University of Chicago Catalog

Find abstract in PubMed from NCBI? - Articles not indexed by PubMed will return "No Items Found"
year: 2002 volume: 116 issue: 7 start page: 3119

Get journal citation and impact report from ISI Journal Citation Reports. Click LOGOFF when finished.
Equilibrium structure and effective pair interaction in a quasi-one-dimensional colloid liquid

Bianziao Cui, Binhua Lin, Sanjay Sharma, and Stuart A. Rice
Department of Chemistry and The James Franck Institute, The University of Chicago, Chicago, Illinois 60637
Title: Sequential STIRAP-based control of the HCN NωdNω CNH isomerization


Publisher: Elsevier Science B.V.
Sequential STIRAP-based control of the HCN isomerization

Chem Phys Lett [0009-2614]
yr: 2001 vol: 344 iss: 1,2 pg: 125

SFX is a new service provided by the University of Chicago Library. If you have any questions or comments, please contact us.

Full text available from Elsevier ScienceDirect
year: 2001 volume: 344 issue: 1,2 start page: 125

Search holdings in The University of Chicago Catalog

Get journal citation and impact report from ISI Journal Citation Reports. Click LOGOFF when finished.

This journal in ulrichsweb.com?
Chemical Physics Letters
Copyright © 2002 Elsevier Science B.V. All rights reserved

Journal Issue Alerts:  Include this journal  |  Select other journals

- Volumes 351 - 353
- Volume 353, Issues 5-6, Pages 325-470 (26 February 2002)
- Volume 353, Issues 1-2, Pages 1-184 (13 February 2002)
- Volume 352, Issues 5-6, Pages 311-554 (6 February 2002)
- Volume 351, Issues 5-6, Pages 341-503 (17 January 2002)
- Volume 351, Issues 3-4, Pages 163-340 (10 January 2002)

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SFX Linking Implementation

- Relatively difficult to implement
- Significant cost
- Moderate maintenance (one half- to full-time position)
- A++ for “appropriate copy”
- Easy to use (not always consistent in results)
- Comprehensive (eventually)
- Transferable to other applications (SQL database)
- Handles aggregators quite well
ChemPort, “Your Library” and SFX

- Increments are generally easy to implement (adding new sources and targets is done both locally and through regular database updates from ExLibris)
- Low incremental cost (vendors sometimes have surcharges, e.g., OVIDLinks for SFX)
- Little extra maintenance
- A++ for “appropriate copy”
- Usually very easy to use (not always consistent in results)
- Comprehensive (eventually?)
- Handles aggregators quite well
What next?

So, now that we have SFX, what else could we possibly want?
What next?

More sources!

- Ulrichs
- SciFinder Scholar/ChemPort (implemented 3/02)
- EbscoHost
- Institute of Physics
- OCLC FirstSearch
- OVID (implemented 3/02)
- ProQuest
- Swets
- Web of Science
More sources!

Coming soon are Eureka, SilverPlatter, CSA, PubMed, Horizon (library catalog)…

We’d also like to enable locally created databases with OpenURLs to provide linking services to those databases (e.g., faculty publications database with links to full text)
What next?

More targets with deeper/more direct links

http://www.sciencedirect.com/science?_ob=IssueURL&_tockey=%23TOC%23235231%23232002%233996469994%2323285170%23FLA%23Volume_353,_Issues_5-6,_Pages_325-470_(26_February_2002)&_auth=y&_acct=C000001358&_version=1&_urlVersion=0&_userid=5745&md5=6c9712ec40562b7f9e61151da300f290

VS.

http://ojps.aip.org/journals/doc/JCPSA6ft/vol_116/iss_7/3119_1-div0.html
What next?

Metadata and associated improvements

- ISSN or other appropriate metadata added to pre-1970’s records (database producers)

- OpenURL standards and technology expanded to handle additional types of metadata (compound identifiers?) for linking to different kinds of targets (patents, MSDS, sequence data, spectra)

- More and better parsers for targets
What next?

More, more, more!

- More services and options
- More targets
- More detailed usage statistics
- Proxy server support
- Extensions of SQL database for other uses
  - A-Z list of journals
  - Storage of licensing and account information
## Usage reports

<table>
<thead>
<tr>
<th>Source</th>
<th>Requests</th>
</tr>
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<tbody>
<tr>
<td>FirstSearch</td>
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<tr>
<td>Default</td>
<td>1695</td>
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<tr>
<td>Web of Science</td>
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<td>EBSCO</td>
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<td>Ulrichs</td>
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<td>Swets</td>
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<table>
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<tr>
<th>Object Type</th>
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<td>Article</td>
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<td>Book</td>
<td>1082</td>
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<tr>
<td>Journal</td>
<td>391</td>
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<tr>
<td>Conference</td>
<td>15</td>
</tr>
<tr>
<td>Bookitem</td>
<td>11</td>
</tr>
<tr>
<td>Proceeding</td>
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Data for 9/1/2001 – 2/13/2002
Targets and sources became available at various times throughout the reporting period
### SFX Requests by Service

<table>
<thead>
<tr>
<th>Service</th>
<th>Requests</th>
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<tbody>
<tr>
<td>getHolding</td>
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</tr>
<tr>
<td>getFullTxt</td>
<td>2259</td>
</tr>
<tr>
<td>getCitedJournal</td>
<td>1364</td>
</tr>
<tr>
<td>getAbstract</td>
<td>121</td>
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<tr>
<td>getDocDel</td>
<td>59</td>
</tr>
<tr>
<td>getAuthor</td>
<td>37</td>
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<td>getTOC</td>
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</table>

Data for 9/1/2001 – 2/13/2002

Targets and sources became available at various times throughout the reporting period
## Usage reports

### Selected Full Text Targets

<table>
<thead>
<tr>
<th>Host</th>
<th>Requests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wiley</td>
<td>46</td>
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<tr>
<td>SpringerLink</td>
<td>14</td>
</tr>
<tr>
<td>RSC</td>
<td>1</td>
</tr>
<tr>
<td>Nature</td>
<td>24</td>
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<tr>
<td>ScienceDirect</td>
<td>156</td>
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<tr>
<td>ACS</td>
<td>8</td>
</tr>
<tr>
<td>IDEAL</td>
<td>63</td>
</tr>
<tr>
<td>ProQuest</td>
<td>529</td>
</tr>
</tbody>
</table>

Data for 9/1/2001 – 2/13/2002

Targets and sources became available at various times throughout the reporting period
Further reading:

**jake: Overview and Status Report**
Kimberly Parker, Cynthia Crooker, and Dan Chudnov
Serials Review 26(4):12-17, 2000
[http://jake-db.org/](http://jake-db.org/)

**Open Linking in the Scholarly Information Environment Using the OpenURL Framework.**
Herbert Van de Sompel and Oren Beit-Arie
D-Lib Magazine, March 2001, Volume 7, Number 3
[http://www.dlib.org/dlib/march01/vandesompel/03vandesompel](http://www.dlib.org/dlib/march01/vandesompel/03vandesompel)

**Silver Bullet: OpenURL and Link Servers (SFX, Openly Jake) Take Aim at the "Appropriate Copy" Problem.**
American Libraries Association Annual Meeting 2001 MARS Hot Topics Discussion Group
[http://www.lib.utah.edu/genref/lkeiter/hot_topics.htm](http://www.lib.utah.edu/genref/lkeiter/hot_topics.htm)

**SFX – Inside Issues for Libraries**
Miriam Blake, Los Alamos National Laboratory Research Library
LITA Electronic Publishing/Electronic Journals Interest Group, American Library Association Mid-Winter Meeting 2001

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CINF Electronic Publishing Symposium
“Chain, chain, chain…” acknowledgements

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Agnes Tatarka (jake)
James Mouw (SFX)
Robert Pleshar (SFX)

“Chain of Fools” As performed by Aretha Franklin
Written by Don Covay in 1967