MUSE HYBRID

SMART CONNECTOR TECHNOLOGY FOR FEDERATED SEARCH

VERSION 1.4 · 27 March 2018 · EDULIB, S.R.L.

MUSE KNOWLEDGE HEADQUARTERS

Calea Bucuresti, Bl. 27B, Sc. 1, Ap. 10, Craiova 200675, România **phone** +40 251 413 496

MUSE KNOWLEDGE EMEA

Khalifa21 El El Mamounst. Roxy Tower, Heliopolis, 11341, Cairo, Egypt **phone** +202 241 87 349

MUSE KNOWLEDGE NORTH AMERICA

340 Madison Avenue 19th Floor New York NY 10173 USA **phone** +1 212 220 9250



CURRENTLY...



There are two basic types of Search Engines:

- Indexing Search
 - A local Indexing Search creates an index from a repository of records, often on a "just in case" basis. The repository may be local (publisher, aggregator, etc.) or may be as wide as the whole Web (Bing, Baidu, Google, etc.)
 - Proprietary web index, such as Bing, Baidu, Google, etc.
 - Open Source Search (OSS) server, such as Apache Solr.

Federated Search

- A local Federated Search translates the user search and sends it to a number of remote Indexing Search Engines, and co-ordinates the results. Since there is no index this is an ad hoc, "just in time" search for each user
- Only proprietary systems, largely due to the ongoing maintenance cost of the Connectors to the remote Sources
- Muse, with its unique connector technology does this and is properly fit in the Federated Search category



PROBLEMS AND OPPORTUNITIES



Both types of Search Engines have their strengths and weaknesses:

- Indexing Search Weaknesses
 - Not all publishers provide meta-data
 - Lack of transparency, what is being indexed (which Journals/Databases), what period is covered
 - Out of date records due to delayed record indexing
 - Only metadata is indexed
 - Large, resource consuming software systems
 - Records are indexed and their index possibly never used
 - Maintenance of the index is an administrative chore due to various delivery formats and types

• Indexing Search Strengths

- Having all records in the result set
- Facets features and filtering
- Browsing features
- Query suggestions, spelling



PROBLEMS AND OPPORTUNITIES

Federated Search Weaknesses

- Inconsistent search results, depending on the Source
- Slow response times
- because of the extra communications involved
- because of the need to process every result record for normalization
- Incomplete coverage
- Unable to rank results well (meta-data differences, lack of info)
- Brings only a limited number of results from each searched source

Federated Search Strengths

- The returned records are up to date, e.g. the latest information is immediately available with no efforts at all
- Integrate publisher platforms on various protocols: Atom, HTTP/HTML, HTTP/XML, JSON, NCIP, OAI-PMH, RSS1.0, RSS2.0, SIP2, SQL, SRU, SRW, Telnet, Z39.50
- The returned records match the native platforms
- Specialized research: medical, legal, etc.
- Wide range of subscribed content



MOVING FORWARD



Combine the strengths of Muse Federated Search platform with an available, high performance local Indexing Search to give the best of both worlds, without the drawbacks of either.

- Combine standard Indexing Search and Federated Search to optimize the powers of both
- Run them together to give rise to MuseKnowledge[™] Hybrid Search (MuseKnowledge[™] HY) which provides a next generation answer to the current problems
- Index records into Apache Solr and store the actual records content in database (MongoDB)
- Search the index and retrieve the records from the database
- A harvesting component must exist to collect the initial set of records and incremental updates
- Muse Control Center is the engine that drives the harvesting



MUSEKNOWLEDGE[™] HYBRID SEARCH COMPONENTS



Muse Harvesting

- Harvest records from publishers; OAI-PMH, MARC records, Common Cartridge
- Initial harvesting for getting records up to current date
- Incremental harvesting for getting the periodical updates

Muse Central Index

- **Contains the index** (Apache Solr), storage (MongoDB) and the ingester tools
- Records brought by the Harvesting Component are processed by the ingester tool which indexes them and stores their content in the storage

Muse Federated Search Component

- Runs Muse Applications for end-users
- **Source Packages** that search the index and retrieve the records from the storage



MUSEKNOWLEDGE[™] HARVESTING

Muse Knowledge[™] Harvesting is a functional system that is used to harvest records for a Muse Knowledge[™] Hybrid Search System.

Harvesting Connectors

- Screen scraping
- Database (JDBC, DBF local binary files)
- Custom XML (HTTP or local files)

Muse Harvesting Application

- Runs the Harvesting Source Packages
- Allows advanced editing of Muse Alerts

Muse Alerts

- Used to run the predefined searches for harvesting
- Allow granular time searches on minutes, hours, days, months, years

Writers

Local files

Muse Control Center

- Used for scheduling system tasks such as harvesting operations
- Supports other types of operations like FTP transfers, email and custom scripts; Complex workflows can be implemented via scripting



MUSEKNOWLEDGE[™] HARVESTING





MUSEKNOWLEDGE[™] HARVESTING OAI-PMH



About OAI-PMH

- OAI-PMH stands for "Open Archives Initiative Protocol for Metadata Harvesting"
- Protocol developed for harvesting (or collecting) metadata descriptions of records in an archive so that services can be built using metadata from many archives
- Publishers expose structured metadata via OAI-PMH
- It uses XML over HTTP

Support in MuseKnowledge[™] Harvesting

- A Harvesting Connector for OAI-PMH protocol is available in Muse. It can harvest data selectively (date range), in oai_dc metadata format
- OAI-PMH Source Packages exist: EmeraldOAI, NatureOAI, ArXivOAI, etc.
- Generic Source Packages are also available



MUSEKNOWLEDGE[™] HARVESTING MARC FILES

About MARC records

- MAchine-Readable Cataloging
- Library catalogs keep records in MARC format
- Libraries provide MARC records using various methods: FTP repository, HTTP, email, etc.

Support in MuseKnowledge[™] Harvesting

- MuseKnowledge[™] Control Center is used to download MARC files from FTP; Custom scripts can be written to download MARC from HTTP
- Once MARC files are obtained they are indexed

When indexing MARC records, the following fields are used to determine the status of a record:

- The record id is obtained by concatenating the Control Number Identifier (003) and Control Number (001) fields
- The record datestamp is obtained from the Date and Time of Latest Transaction (005) field
- The record deleted status is obtained from the MARC record leader. If a record is marked as deleted, it will also be deleted from Muse Central Index



MUSEKNOWLEDGE[™] HARVESTING COMMON CARTRIDGE[®]

About Common Cartridge®

- Standardized way to package and exchange digital learning materials and assessments
- Standardized way to exchange links and provide authorization to third party web-based learning tools via Learning Tools Interoperability
- Provides a standard way to represent digital course materials for use in online learning systems

Support in MuseKnowledge[™] Harvesting

- MuseKnowledge[™] Control Center is used to download Common Cartridge[®] archives from FTP; Custom scripts can be written to download Common Cartridge[®] archives from HTTP
- Once Common Cartridge® archives are obtained they are indexed

When indexing Common Cartridge® records, the following fields are used to determine the status of a record:

- The record id is obtained by concatenating the Organization Identifier, Root Item Identifier and the Record Identifier attributes
- The updates are ingested from scratch, like the initial ingest



MUSEKNOWLEDGE[™] CENTRAL INDEX

MuseKnowledge[™] Central Index is a collection of pre-harvested metadata and full text that is searched by the MuseKnowledge[™] Hybrid Service.

- The record format used is a Dublin Core-based schema
- Can index e-book and article metadata, catalog records, and other information harvested from institutional repositories and other digital collections via the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH)
- Index
 - Apache Solr is the most popular enterprise search engine

- Storage
 - The storage keeps all the records available in the Muse Central Index
 - MongoDB is a popular database engine
- Ingester
 - The process of adding or updating records in Muse Central Index is called ingesting
 - The MuseKnowledge[™] Central Index Ingester can handle MARC records and Muse records
 - Ingested records are indexed in Apache Solr and stored in MongoDB



ABOUT APACHE SOLR AND MONGODB

Apache Solr

- **Open source** enterprise search platform built on Apache Lucene[™] java-based indexing and search technology
- Powerful matching capabilities including phrases, wildcards, joins, grouping and much more across any data type
- Schema driven indexing
- Providing faceted search and filtering, query suggestions and spelling
- Support for multi-tenant architectures
- Performance optimizations, scalability
- Great developer and user community

MongoDB

- Fourth most widely mentioned database engine on the web, and the most popular for document stores
- Free and open source cross-platform documentoriented database; NoSQL database, JSON like documents with dynamic schemas
- **Provides field, range queries,** regular expression searches. Queries can return specific fields of documents and also include user-defined JavaScript functions
- Internal index for quicker retrieval of records
- **Provides high availability** with replica sets
- High scalability using sharding



MUSEKNOWLEDGE[™] HYBRID SEARCH SETUP

Evaluate the list of publishers from metadata availability point of view Contact them for confirming and getting the metadata. Clarify the delivery of the periodical updates

Set up the harvesting:

- For OAI-PMH delivery load the corresponding OAI-PMH Source Packages into the Muse Harvesting Application and create the Muse Alert with the needed details, such as the extraction time frame. In MuseKnowledge[™] Control Center setup and configure the Muse Alerts Task to run with the desired frequency for the saved alerts
- For MARC records delivered via FTP, set up in Muse Control Center an FTP download task

Set up the ingesting:

- In MuseKnowledge[™] Control Center create and configure tasks for each harvested resource; Done via an Ant type task which calls the Muse Central Index Ingester tool with the following mandatory parameters:
 - Solr URL
 - MongoDB URI
 - ICE Records folder (for OAI-PMH harvested records) or MARC files location

Searching:

- In a Muse Search (or MuseKnowledge[™]) Application add and configure Muse CentralIndex Source Packages
- Generic Source Packages are also available.



LINKING TO FULL TEXT

- Mandatory to link to publisher's platform for the full text
- Usually the provided metadata contain URLs to link to the record/journal/book on the native website
- If an URL is not available build one dynamically if possible. If a DOI identifier is available use it to form the URL to a DOI System Proxy Server, like dx.doi.org; Example:
 - http://dx.doi.org/10.1109/JSEE.2013.00023
- Authentication to the publisher's platform needs to be addressed as well; This is done with MuseKnowledge[™] Proxy rewriting, e.g. all record URLs are being custom rewritten by appending it to the proxy prefix URL. Example:
 - http://PROXY_HOST:PROXY_PORT/ProxyApplication?qurl=RE CORD_URL

- The MuseKnowledge[™] Proxy Application (Proxy Application) must contain source profiles that cover the rewriting of all publishers URLs. A source profile for the dx.doi.org resource must exist as well
- The authentication mechanism to the

MuseKnowledge[™] Proxy Application must be considered as well: User/Password files, client IP addresses, client referer URL, standard or custom authentication methods (LDAP, IMAP, SQL, FTP), SAML, HMAC;



MUSEKNOWLEDGE[™] HYBRID SEARCH DEMONSTRATION

My Account											
	Search Options	Search Sources	Saved Searches	WorkRoom	Alerts	Vocabularies	User Pro	perties	Sign In		
Alerts										Create New Alert	?
Query		Des	cription		Stat	us Expires	Interval	Actions	5		
1. * #LIMITERS :DATE[relation AND :DATE[relation="<="] 1 « Less Details)=">="] 1994-11-1 994-11-17	7			Enab	led 2017-2-14	1 Day	Renew Run: S Display	Edit De Search y:Meters	lete Disable More De	tails »
 *#LIMITERS :DATE[relation AND :DATE[relation="<="] 2 « Less Details 	=">="] 2016-08-2 016-08-22	2			Enab	led 2017-2-18	1 Day	Renew Run: S Display	Edit De Search y:Meters	lete Disable More De	tails »
										Close Win	ndow

- Harvesting:
- Harvesting Application: MuseHarvesting, Source Packages installed: EmeraldOAI, NatureOAI
- Muse Alerts set

- List of Publishers: Springer/Nature, Thomson Reuters, Elsevier, Wolters Kluwer, Emerald Insight, IET, SAGE/AMDigital, Wiley, Gale, Digital Content Associates (Zinio, Atomic Training, Rosen Digital, InfoBase, ME Books, PressReader), RSC, Britannica, DarAlMandumah, Discovery, IEEE, Cambridge University Press, Ebsco, ProQuest
- OAI-PMH providing publishers: Nature, Emerald
- MARC files providing publishers: Springer, Wolters Kluwer, IET, SAGE, AMDigital, Gale, RSC, IEEE, Ebsco, InfoBase
- Common Cartridge® providing publishers: Discovery Education



MUSEKNOWLEDGE[™] HYBRID SEARCH DEMONSTRATION

4	10	Emerald - Harvest OAI Start Delete Copy Edit Report	Alerts	Idle	Record processing for Emerald.
23	1	Nature - Harvest OAI	Alerts	Done	Historical record processing for Nature.

- Muse Control Center tasks loaded:
 - For OAI-PMH harvesting

1 View Mark Configurers Absoluter Strategy Running View The stage merates three works for the other tasks to trigger at different moments of time (no.u), skill, weekly or monthly 2 View Strate And							
2 9 20 Rest Rest Res Inclusion Inclus	1	1	Muse Control Center Scheduler	Scheduler	Running	\checkmark	This task generates time events for the other tasks to trigger at different moments of time (hourly, daily, weekly or monthly).
1 01000 Springer Moncook-Ingest MARC And Mail	2	4 Q	Reset	Ant	Idle	\checkmark	No description available.
1 01/5 Finald - Hivest CM Alerta Isla Isla Record pressning for Emeraid. 5 01/65 Emeraid - Hivest CM Art Isla Isla Record Ingesting for Emeraid. 6 01/65 MOlgiac/CA - Ingest MARC Art Isla Isla Record Ingesting for Adam Mathew. Confidential Prict. Africa. 1834-1060 7 01/65 AMOlgiac/CA - Ingest MARC Art Isla Isla Record Ingesting for Adam Mathew. Confidential Prict. Africa. 1834-1060 7 01/65 Record Ingesting for Adam Mathew. Confidential Prict. Africa. 1834-1060 Record Ingesting for Adam Mathew. Confidential Prict. Midle East. 1338-1060 7 01/65 Record Ingesting for Adam Mathew. Confidential Prict. Midle East. 1338-1060 Record Ingesting for Adam Mathew. Confidential Prict. Midle East. 1338-1060 7 01/65 Record Ingesting for Adam. Mathew. Confidential Prict. Midle East. 1338-1060 Record Ingesting for Adam. Mathew. Confidential Prict. Midle East. 1338-1060 7 01/65 IsladMode/EastMach Art Isla Isla Record Ingesting for Adam. Mathew. Confidential Prict. Midle East. 1338-1060 7 01/65 IsladMode/EastMach Art Isla Isla Record Ingesting for Cale. the Middle East. 1338-1060 7 01/65 IsladMode/EastMach Art Isla Isla <t< td=""><td>3</td><td>4 1</td><td>SpringerProtocols - Ingest MARC</td><td>Ant</td><td>Idle</td><td>\checkmark</td><td>Record ingesting for Springer Protocols.</td></t<>	3	4 1	SpringerProtocols - Ingest MARC	Ant	Idle	\checkmark	Record ingesting for Springer Protocols.
s % Ø feecad - legest XAL Art Isla % Record legesting for Adam Matheur. Condidential Prict. Micros. 1534-1060 0 Ø <	4	1	Emerald - Harvest OAI Start Delete Copy Edit Report	Alerts	Idle		Record processing for Emerald.
0 MADQ allor CA- ingest MARC Anti Isle Image: Ingesting for Adam Mathew: Confidential Pint: Attica, 1834-1900 7 0/13 MADQ allor CME: ingest MARC Anti Isle Image: Ingesting for Adam Mathew: Confidential Pint: Model East, 1839-1900 8 0/13 REEE Ingest MARC Anti Isle Image: Ingesting for Adam Mathew: Confidential Pint: Model East, 1839-1900 9 0/13 RESClook: - Ingest MARC Anti Isle Image: Ingesting for Adam Mathew: Confidential Pint: Model East, 1839-1900 10 0/13 Resclook: - Ingesting for Adam Mathew: Confidential Pint: Model East, 1839-1900 Anti Image: Ingesting for Adam Mathew: Confidential Pint: Model East, 1839-1900 11 0/13 Resclook: - Ingesting for Adam Mathew: Confidential Pint: Attica, 1834-1900 Anti Image: Ingesting for Adam Mathew: Confidential Pint: Model East, 1917-1970 11 0/13 Gaki Model East, Ingest MARC Anti Isle Image: Ingesting for Gak: Instinal Geographic MageZine Archive 12 0/13 Gaki Model East, Ingest MARC Anti Isle Image: Ingesting for East Mathew: Confidential Pint: Attria, 1814-1924 13 0/13 East-Aberbani- Ingest MARC Anti Isle Image: Ingesting for East Antria, Isle <td< td=""><td>5</td><td>Q Q</td><td>Emerald - Ingest XML</td><td>Ant</td><td>Idle</td><td>\checkmark</td><td>Record ingesting for Emerald.</td></td<>	5	Q Q	Emerald - Ingest XML	Ant	Idle	\checkmark	Record ingesting for Emerald.
7 3/2 AND glas DPME - logest MARC Art Ide 7 Record logesting for Adam Matthew: Confidential Print: Middle East, 1839-1899 8 3/2 IEEE-ngest MARC Art Ide 7 Record logesting for IEEE Xylow Diglat Lbray. 9 3/2 SCBooks-Ingest MARC Art Ide 7 Record logesting for Gale: the Middle East Online. Arab-tareal relations, 1917-1870 10 3/2 GaleMiddleExinga-ingest MARC Art Ide 7 Record logesting for Gale: the Middle East Online. Arab-tareal relations, 1917-1870 11 3/2 GaleMiddleExinga-ingest MARC Art Ide Record logesting for Gale: the Middle East Online. Arab-tareal relations, 1917-1870 12 3/2 GaleMiddleExinga-ingest MARC Art Ide Record logesting for Gale: the Middle East Online. Arab-tareal relations, 1917-1870 13 3/2 GaleMiddleExinga-ingest MARC Art Ide Record logesting for Gale: the Middle East Online. Ingest MARC 14 3/2 Oxid - Ingest MARC Art Ide Ide Record logesting for Eastowaked World Research. 15 3/2 Ebstohidelesarch-logest MARC Art Ide Ide Record logesting for Eastowaked World Research. 16 3/2 Ebstohidelesarch-logest MARC Art Ide Ide	6	00	AMDigitalCPA - Ingest MARC	Ant	Idle	\checkmark	Record ingesting for Adam Matthew: Confidential Print: Africa, 1834-1966
s S IEEE - logest MARC Ard Isle S Record ingesting for SESBooks. 9 \$7.9 Rockingest MARC Ard Isle S Record ingesting for SSBooks. 10 \$7.9 GaldAddeEssArkabsrade. Ingest MARC Ard Isle S Record ingesting for SRS Indicates Markabsrade. Instances. Record ingesting for SRS. Indicates Markabsrade. Instances. 11 \$7.9 GaldAddeEssArkabsrade. Ingest MARC Ard Isle S Record ingesting for SRS. Indicates Markabsrade. Instances. Record ingesting for SRS. Indicates Markabsrade. Instances. 12 \$7.9 GaldAddeEssArkabsrade. Ingest MARC Ard Isle S Record ingesting for SRS. Indicates Markabsrade. 13 \$7.9 CalcenardSarch-Ingest MARC Ard Isle S Record ingesting for SRS. Indicates Araby Markabsrade. 14 \$7.9 CalcenardSarch-Ingest MARC Ard Isle S Record ingesting for SRS. Indicates Araby Markabsrade. 15 \$7.9 Record Ingesting For SRS. Indicates Araby Markabsrade. Ard Isle S Record ingesting for SRS. Indicates Araby Markabsrade. Record ingesting for SRS. Indicates Araby Markabsrade. Record ingesting for SRS. Indica	7	00	AMDigitalCPME - Ingest MARC	Ant	idle	\checkmark	Record ingesting for Adam Matthew: Confidential Print: Middle East, 1839-1989
0 ŷ ŷ R8000k3 - Ingest MARC Ant Isle ŷ Record ingesting for RSGBooks. 10 ŷ ŷ GalekiddeEsatA-shbrael - Ingest MARC Ant Isle ŷ Record ingesting for Gale: the Middle Esat Online: /rab-Israel relations, 1917-1970 11 ŷ ŷ GalekiddeEsatA-a-Ingest MARC Ant Isle ŷ Record ingesting for Gale: the Middle Esat Online: Iraa, 1914-1974 12 ŷ ŷ GalekiddeEsatA-a-Ingest MARC Ant Isle ŷ Record ingesting for Gale: the Middle Esat Online: Iraa, 1914-1974 13 ŷ ŷ GalekiddeEsatA-Ingest MARC Ant Isle ? Record ingesting for Gale: the Middle Esat Online: Iraa, 1914-1974 14 ŷ ŷ GaleKionedge - Ingest MARC Ant Isle ? Record ingesting for Gale: National Geographic Magzine Archive 15 ŷ ŷ GaleXioArabyKineBearch - Ingest MARC Ant Isle ? Record ingesting for Ebaco Arab Word Research. 16 ŷ ŷ Escol-MadyKineBearch - Ingest MARC Ant Isle ? Record ingesting for Ebaco Arab Word Research. 17 ŷ ŷ ŷ Escol-MadyKineBearch - Ingest MARC Ant Isle ? Record ingesting fo	8	00	IEEE - Ingest MARC	Ant	Idle	\checkmark	Record ingesting for IEEE Xplore Digital Library.
10 10 <td< td=""><td>9</td><td>00</td><td>RSCBooks - Ingest MARC</td><td>Ant</td><td>idle</td><td>\checkmark</td><td>Record ingesting for RSCBooks.</td></td<>	9	00	RSCBooks - Ingest MARC	Ant	idle	\checkmark	Record ingesting for RSCBooks.
11 10 0 Readed deficiting - Ingest MARC Art Ide 10 10 Readed deficiting - Ingest MARC Art Ide 10 10 Readed deficiting - Ingest MARC Art Ide 10 10 SAGEKnowledge - Ingest MARC Art Ide 10 10 SAGEKnowledge - Ingest MARC Art Ide 10 10 Readed heading for SAGEKnowledge. 11 10 10 0 Ord - Ingest MARC Art Ide 10 Readed heading for SAGEKnowledge. 12 10 0 0 Ord - Ingest MARC Art Ide 10 Readed heading for SAGEKnowledge. 13 0 0 0 Readed heading for SAGEKnowledge. Readed heading for SAGEKnowledge. 14 0 0 0 Readed heading for SAGEKnowledge. Readed heading for SAGEKnowledge. 15 0 0 0 Readed heading for SAGEKnowledge. Readed heading for Shote Mark Meade Heading for Shote Measurch. Readed heading for Ebsoo Ansurch. Readed heading for Ebsoo	10	Q Q	GaleMiddleEastArabIsraeli - Ingest MARC	Ant	Idle	\checkmark	Record ingesting for Gale: the Middle East Online: Arab-Israeli relations, 1917-1970
12 10 0 0.04KOMA - ingest MARC Art Ide 1 1 0 0 0.000 ingest MARC Art Ide 1 0 0 0.000 ingesting for SAGEKnowlege. 10 0 0 0 Escontragesting for Elsco Arab World Research. 0 </td <td>11</td> <td>00</td> <td>GaleMiddleEastIraq - Ingest MARC</td> <td>Ant</td> <td>Idle</td> <td>\checkmark</td> <td>Record ingesting for Gale: the Middle East Online: Iraq, 1914-1974</td>	11	00	GaleMiddleEastIraq - Ingest MARC	Ant	Idle	\checkmark	Record ingesting for Gale: the Middle East Online: Iraq, 1914-1974
13 9 (2) SAGEKnowledge - Ingest MARC Art Ide 9 (2) Record ingesting for SAGEKnowledge. 14 9 (2) Ord - Ingest MARC Art Ide 9 (2) Record ingesting for SAGEKnowledge. 15 9 (2) Ebscohlmart-Stagest MARC Art Ide 9 (2) Record ingesting for SAGE Knowledge. 16 9 (2) Ebscohlmart-Stagest MARC Art Ide 9 (2) Record ingesting for Ebsco Arab Word Research. 17 9 (2) Ebscohlmart-Stagest MARC Art Ide 9 (2) Record ingesting for Ebsco Arab Word Research. 18 9 (2) Ebscohlmart-Stagest MARC Art Ide 9 (2) Record ingesting for Ebsco Made Starch Plus. 19 9 (2) Ebscohlmart-Stagest MARC Art Ide 9 (2) Record ingesting for Ebsco Made Starch Plus. 10 9 (2) Indetter Stagest MARC Art Ide 9 (2) Record ingesting for Ebsco Made Starch Plus. 11 9 (2) Indetter Stagest MARC Art Ide 9 (2) Record ingesting for Springer Ebscos. 12 9 (2) Indettebscost-singest MARC Art I	12	00	GaleNGMA - Ingest MARC	Ant	idie	\checkmark	Record ingesting for Gale: National Geographic Magazine Archive
14 17 Note - Ingest MARC Art Isla Isla Record ingesting for Oxid. 15 17 2 EscoArab World Research - Ingest MARC Art Isla Isla Record ingesting for Oxid. 16 17 17 17 EscoArab World Research - Ingest MARC Art Isla Isla Record ingesting for Ebsco Arab World Research. 17 17 17 17 EscoMideSaarch Puis - Ingest MARC Art Isla Isla Record ingesting for Ebsco Primary Search. 18 17 17 17 EscoMideSaarch Puis - Ingest MARC Art Isla Isla Record ingesting for Ebsco Middle Search Plus. 19 17 17 17 EscoMideSaarch Plus - Ingest MARC Art Isla Irl Record ingesting for Ebsco Middle Search Plus. 10 17 17 17 17 Record ingesting for Ebsco Made Search Plus. Record ingesting for Ebsco Made Search Plus. 10 17 17 17 17 Record ingesting for Flator Abs March Record ingesting for Flator Abs March 11 17 17 17 17 Record ingesting for	13	U	SAGEKnowledge - Ingest MARC	Ant	Idle	\checkmark	Record ingesting for SAGEKnowledge.
15 ŷ ŷ EscoArabWork/Research-Ingest MARC Art Isle ŷ ø Record ingesting for Ebsco Arab Work/ Research. 16 ŷ ŷ EscoArabWork/Research-Ingest MARC Art Isle ŷ ø Record ingesting for Ebsco Primary Search. 17 ŷ ŷ EscoArabWork/Research-Ingest MARC Art Isle ŷ ø Record ingesting for Ebsco Primary Search. 18 ŷ ŷ EscoArab/Lina-Ingest MARC Art Isle ŷ ø Record ingesting for Ebsco Middle Search Plus. 19 ŷ ŷ EscoArab/Lina-Ingest MARC Art Isle ŷ ø Record ingesting for Ebsco Mach Search Plus. 10 ŷ ŷ EscoArab/Lina-Ingest MARC Art Isle ŷ ø Record ingesting for Ebsco Arab Work/Research. 10 ŷ ŷ EscoArab/Lina-Ingest MARC Art Isle Ø ø Record ingesting for Ebsco Arab Work/Research. 11 ŷ ŷ InfoaseScience/Lina-Ingest MARC Art Isle Ø ø Record ingesting for Inbase Science/Cinine. 12 ŷ ŷ SpingerEbschs-Ingest MARC Art Isle Ø ø Record ingesting for Spinger Ebschs. 12 ŷ ŷ SpingerEbschs-Ing	14	00	Ovid - Ingest MARC	Ant	idie	\checkmark	Record ingesting for Ovid.
16 17 <	15	00	EbscoArabWorldResearch - Ingest MARC	Ant	Idle	\checkmark	Record ingesting for Ebsoo Arab World Research.
17 <	16	0 Q	EbscoPrimarySearch - Ingest MARC	Ant	Idle	\checkmark	Record ingesting for Ebsco Primary Search.
18 19 20 EscooreanFLE-Ingest MARC Art Isle 12 Record ingesting for Ebsco GreenFLE. 19 10 EscooreanFLE-Ingest MARC Art Isle 12 Record ingesting for Ebsco MAS Ultra. 10 10 10 Indosesting condingesting for Indoses Science Online. Record ingesting for Indoses Science Online. 11 10 10 Springer Backs-Ingest MARC Art Isle 12 Record ingesting for Springer Ebocks. 12 10 Springer Palgrave - Ingest MARC Art Isle 12 Record ingesting for Springer Ebocks. 12 10 Springer Palgrave - Ingest MARC Art Isle 12 Record ingesting for Springer Palgrave. 12 10 Springer Palgrave - Ingest MARC Art Isle 12 Record ingesting for Springer Palgrave. 13 10 Springer Palgrave - Ingest MARC Art Isle 12 Record ingesting for Springer Palgrave. 14 10 Springer Palgrave. Art Isle 12 Record ingesting for Thates. 15 10 Nature - Ingest XML Art Isle 12 Record ingesting for Thates. 16 10 Feerord ingesting for Thates. Isle 12 Record inge	17	00	EbscoMiddleSearchPlus - Ingest MARC	Ant	Idle	\checkmark	Record ingesting for Ebsoo Middle Search Plus.
10 10 10 10 10 10 Record logisting for Ebsco MAS Ultra. 20 10 10 10 Ant Ide 10 Record logisting for Ebsco MAS Ultra. 21 10 20 SpingerEbooks - Ingest MARC Ant Ide 10 Record logisting for Spinger Ebooks. 21 10 30 SpingerEbooks - Ingest MARC Ant Ide 10 Record logisting for Spinger Ebooks. 22 10 30 SpingerEbooks - Ingest MARC Ant Ide 10 Record logisting for Spinger Ebooks. 23 10 Shitner-Ingest MARC Ant Ide Image Spinger Palagrave. 24 10 SpingerEbooks. Anter-Ingest MARC Ant No 25 10 Nature-Ingest MARC Ant Done Image Spinger Palagrave. 26 10 Teller-Ingest MARC Ant Ide Image Spinger Palagrave.	18	00	EbscoGreenFILE - Ingest MARC	Ant	Idle	\checkmark	Record ingesting for Ebsco GreenFILE.
20 ⑦ ③ IndoaseScienceOnline - Ingest MARC Art Izle ⑦ Record ingesting for Indoase Science Online. 21 ⑦ ③ SpringerEbooks - Ingest MARC Art Izle ⑦ Record ingesting for Springer Ebooks. 22 ⑦ ③ SpringerEbooks - Ingest MARC Art Izle ⑦ Record ingesting for Springer Ebooks. 23 ⑦ ③ Nature - Harvest OAI Art Izle ⑦ Record ingesting for Springer Palgrave. 24 ⑨ ③ Nature - Ingest XML Art Done ✓ Record ingesting for Nature. 25 ⑨ TheIET - Ingest MARC Art Izle ✓ Record ingesting for TheIET.	19	U	EbscoMASUltra - Ingest MARC	Ant	Idle	\checkmark	Record ingesting for Ebsoo MAS Ultra.
21 0 0 0 SpringerEbooks - Ingest MARC Art Idle Image: Record Ingesting for Springer Ebooks. 22 0 0 0 SpringerPalgrave - Ingest MARC Art Idle Image: Record Ingesting for Springer Palgrave. 23 0 0 0 Nature - Harvest OAI Alerts Done Image: Material Information Springer Palgrave. 24 0 0 0 Nature - Ingest MARC Art Done Image: Record Ingesting for Nature. 25 0 0 TheET - Ingest MARC Art Idle Image: Record Ingesting for TheIET.	20	00	InfobaseScienceOnline - Ingest MARC	Ant	Idle	\checkmark	Record ingesting for Infobase Science Online.
22 0 is SpringerPalgrave - Ingest MARC Art Isle Image: Record Ingesting for Springer Palgrave. 23 0 is Nature - Harvest OAI Alerts Done Image: Historical record Ingosting for Nature. 24 0 is Nature - Ingest XML Art Done Image: Record Ingesting for Nature. 25 0 image: The Transet XML Constraints Art Image: Record Ingesting for The Transet XML Constraints Art Image: Record Ingesting for The Transet XML Constraints Art Image: Record Ingesting for The Transet XML Constraints Art Image: Record Ingesting for The Transet XML Constraints Art Image: Record Ingesting for The Transet XML Constraints Art Image: Record Ingesting for The Transet XML Constraints Art Image: Record Ingesting for The Transet XML Constraints Art Image: Record Ingesting for The Transet XML Constraints Art Image: Record Ingesting for The Transet XML Constraints Art Image: Record Ingesting for The Transet XML Constraints Art Image: Record Ingesting for The Transet XML Constraints Imag	21	00	SpringerEbooks - Ingest MARC	Ant	Idle	\checkmark	Record ingesting for Springer Ebooks.
23 0 3 Nature - Harvest OAI Alerés Done Initial Record processing for Nature. 24 0 3 Nature - Ingest XML Ant Done Image: Record processing for Nature. 25 0 3 TheET - Ingest MARC Ant Image: Record processing for TheET.	22	5 D	SpringerPalgrave - Ingest MARC	Ant	Idle	\checkmark	Record ingesting for Springer Palgrave.
24 30 W Nature - Ingest XML Ant Done Image: Constraint of the i	23	00	Nature - Harvest OAI	Alerts	Done	\checkmark	Historical record processing for Nature.
25 🕜 TheIET - Ingest MARC Ant Idle 🔽 Record ingesting for TheIET.	24	0 0	Nature - Ingest XML	Ant	Done	\checkmark	Record ingesting for Nature.
	25	Û	TheIET - Ingest MARC	Ant	Idle	\checkmark	Record ingesting for TheIET.

Ingesting:

• For OAI-PMH and MARC files



MUSEKNOWLEDGE[™] HYBRID SEARCH DEMONSTRATION

+⊡ 👔 MuseKnowledge™ Four × + ∨			- 0
- ightarrow ightar	KnowledgeFoundation/#/search		
MuseKnowledge™ Foundation			∯ Home 🔍 Search 🥥 English 👻 🌡 My Account 🕪 Log
Search Sources II 🛛 🛛 🗸 🗸	🛼 🍭 MUSE		Related Queries 📀
7 Started Completed 100%	KNOWLEDGE		<u>.TITLE "computer programmer" OR :TITLE "computer programming"</u> CREATOR IEEE Computer Society
Filter your Sources			More »
Sources 137,508	computer	Keyword - +	
tre for Agriculture and Biosciences International 6 al Society of Chemistry (RSC): Books (14)	Options - Search History - 🕐	Go	Dictionary 📀
E: Knowledge 69			1. computer
ngerPalgrave 93	Image: Full Record Detail ▼ ↓ None ▼ ♥ None ▼ ♥ Records ① ▼ □ ▼ / # 10 ▼		noun 1. a programmable electronic device designed to accept data, perform
			of these operations. Mainframes, desktop and laptop computers, tablets, and
ine your Results 11 17 11 0	Results 1-10 from 10 retrieved. About 137,508 results found. 0	- 111 +	smartphones are some of the different types of >
	1 🗌 🖶 Crime scene to courth/alectronic recourse) : The assertials of farancic science / Edited by Pater C. White: Contributions by Adria	in Emoc lot al 1 M	
arch Within Results	Epublication based on: 9780854046560.	in Enles fer al.j. 🗠	Wikinadia O
Authors 60 Varis 0 Kenwards 63 Companies 63	Forensic Science The Crime Scene Trace and Contact Evidence Marks and Impressions Bloodstain Pattern Analysis The Forensi	c Examination of	The point of
Locations (1) Products (3)	Documents Computer Based Media Fire Investigation Explosions Firearms Drugs of Abuse Forensic Toxicology Alcohol Analy of Body Eluide Presentation of Expert Forensic Evidence Subject	sis The Analysis	1. <u>Computer</u> A computer is a device that each to instructed to earny out arbitrary convenses of
	Covers all three main areas of an investigation where forensic science is practised, namely the scene of the crime, the forensic laboratory	and the court.	arithmetic or logical operations automatically. The ability of computers
aning and inter (Online compiles) 10	PDF: Adobe PDF.		
oringerLink (Untine service)	Ebook		
A.B. International, issuing body. 🤨 Neidle,	Publisher: Cambridge, Royal Society of Chemistry, 2004.	College A M.C.	
hen, 2 Turvey, Keith, on-screen presenter, 2 Allen-Robertson	Autori: write, Peter C. Ernes, Auran. Sites, Aurey. Price, Units. Yvanace, 253. Matshai, M. Watson, M.D. Weston, Norman L. Anderson, Rohort A. Pothwall T.J. Hony, Jonathan - Barriart Keith G. Stockdale, R.F. Ida, Roger Hone	· Gallop, A.W.C. ·	
is. author, Bai, Yawen, Bailly, Christian, Berger, Michael, Berry, David M. author,	Subject: Chemistry - bicssc • Science - effch		
n, Tom, C. G. Harman Carrington, Victoria, Connor, Joe A. Craighead, Harold G.	Date: 2004.		
Natalie, Dijk, Jan van, 1952, Enoch, Steven, Fitch, Andy, Professor, Fox, Keith R.	Edition: 2nd rev. ed.		
ovazzo, Carmelo, Professor, Graves, David, Gualeni, Stefano, author, Guillaume	★介介介介 Royal Society of Chemistry (RSC): Books <u>Persistent URL</u> 角 <u>« Less</u>		
waux macker, Nenneth L. Hewitt, Mark, Hotho, Sabine, editor, Ide, Roger Hope,	2 🗆 🗛 Validades of absorb to state waters. Mariles had a substate state of the st	Develle Certer	
Allyn, Philip, Marchand, Christophe, Moore, E.A. Nielsen, Peter E. O'Brien, Paul.	2. Im a validation or chromatography data systems Meeting business and regulatory requirements / [electronic resource] : / Robert D. M edited by Roper M. Smith. [II]	COOWAII; Series	
Dinshaw, Richard, Ann. Roberts, David, Robinson, Muriel, Rodriguez-Carvajal, 🔍	Epublication based on: 9780854049691.		
	How to use this book Introduction to Chromatography Data Systems Regulatory Requirements for CDS Validation Concepts of Comp	outer Validation	
ay: 📃 🌰 🕒 Processing completed.	CDS Validation: Managing System Risk Process Redesign to Exploit the Tangible Benefits of Electronic Signatures with a CDS Writing	the User	
	Requirements Specification (URS)- Controlling the Work: The Validation »		
	I his the introduces the basics of computer validation. It is ideal for the chromatographer and will be welcomed by consultants or those in anencies	regulatory	
	PDF: Adobe PDF.		
	Ebook.		
	Publisher: Cambridge, Royal Society of Chemistry, 2005.		
	Author: McDowall, Robert D. • Smith, Roger M.		
	Subject: Chemistry Dicssc • Science effich ISSN: 1767-7063		
	Date: 2005.		
	★★かかか Royal Society of Chemistry (RSC)- Rooks Persistent URL ● ≪ Less		

Search:

•

- MuseSearch Application with Muse Central Index Source Packages
 - **Individual Source Packages** for each publisher/product:
 - MuseCentralIndexEbscoAWR
 - MuseCentralIndexEmerald MuseCentralIndexIEEE
 - MuseCentralIndexNature
 - MuseCentralIndexNature, etc.



REFERENCES

- Muse Central Index.pdf
- Muse Harvesting Overview.pptx



MUSE HYBRID

SMART CONNECTOR TECHNOLOGY FOR FEDERATED SEARCH

