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# NISO Metasearch Initiative Issues First Set of Recommendations

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# NISO Metasearch Initiative Issues First Set of Recommendations

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*This is the second of a two-part article on the Metasearch Initiative of the National Information Standards Organization (NISO). Part 1, which appeared in February 2006, focused on the issues that prompted the creation of the Metasearch Initiative and reviewed NISO's plan of action. Part 2, reviews the first set of recommendations made by the NISO metasearch committees.*


The **National Information Standards Organization (NISO)** established the **Metasearch Initiative** in late 2003 to enable metasearch service providers, content providers, and libraries to offer more effective and responsive metasearching. Part 1 of this article in the February 2006 issue of *Against the Grain*<sup>1</sup> introduced the initiative and its three task groups: Access Management, Collection and Service Descriptions, and Search and Retrieval.

All three **Metasearch Initiative** task groups presented their first set of recommendations at the **NISO Metasearch** workshop<sup>2</sup> held in September 2005 in Washington, D.C. The recommendations range from best practices to draft standards for trial use, XML protocols, and metadata element sets. All are designed to advance the use of metasearch technology and benefit both the providers and users of these services.

## Authentication and Access Methods Recommendations

The **Access Management Task Group** issued a report on *Ranking of Authentication and Access Methods Available to the Metasearch Environment*<sup>3</sup> in which they identified and evaluated 12 existing authentication methods, listed in Table 1, for their usability in a metasearch environment.

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the electronic environment as well. Many library users already expect the easy to use search box that they associate with many major search engines, and in the future they may come to expect features of **Ajax** in library related applications such as online databases, the library Website, e-journal portals, and the **OPAC**. With the growing use of **Ajax** on the Web, it is an innovative use of technology to keep an eye on in the future. 

**Table 1: Authentication Methods**

Method	Description
<b>Athens</b>	an Access Management system for controlling access to Web-based subscription services
<b>Cookies</b>	a small bit of information that a Web server can store temporarily within a client computer for use by browser software
<b>IP Filtering</b>	a method for limiting access to a server based on the Internet Protocol (IP) address of the incoming connection
<b>Kerberos</b>	a network authentication protocol that utilizes secret-key cryptography
<b>LDAP(Lightweight Directory Access Protocol)</b>	an open-standard protocol for accessing X.500 directory services utilizing a simplified TCP/IP stack
<b>NCIP (NISO Circulation Interchange Protocol)</b>	a protocol for the exchange of messages between and among computer-based applications to enable them to perform the functions necessary to lend and borrow items, to provide controlled access to electronic resources, and to facilitate co-operative management of these functions
<b>Proxy Server</b>	an intermediary server that is used to provide additional security between a client and the end server by filtering or caching transactions in both directions
<b>Referring URL</b>	a method for enabling authentication based on the URL of the source which provided the link
<b>Shibboleth</b>	an architecture and policy framework for services to exchange information about their users in a secure, and privacy-preserving manner
<b>SIP/SIP2(Standard Interchange Protocol)</b>	a protocol to allow self-service machines in the library to exchange data with the library automation system
<b>Username &amp; Password</b>	a method of authentication requiring the matching of a username with its associated password
<b>X.509 Digital Certificates</b>	a mechanism of utilizing public-key certificates for authentication

To evaluate these authentication methods, the group developed a comprehensive set of use cases that were then simplified to three metasearch specific cases: 1) In-Domain User;

2) Out-of-Domain User; and 3) Credentialed Access User. They also identified a set of environmental factors that are critical success factors in metasearch, as listed in Table 2.

**Table 2: Environmental Factors Critical to Metasearch**

1. Suitability/Effectiveness	7. Maintainability
2. Ease of Implementation	8. Robustness
3. Licensing Cost	9. Scalability
4. Implementation Cost	10. Simplicity of Understanding
5. Software Expertise Required	11. Acceptance/Preexisting Implementation
6. Security	

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Each of the authentication methods was ranked against the three use cases and the eleven environmental factors and an average ranking was calculated and plotted on a scatter chart.

The Task Group concluded that none of these methods fully solves the metasearch authentication problem in their current form; however, they recommended that the best practice for now in a metasearch environment is either:

### IP-Authentication with a Proxy Server, or Username/Password authentication

or both in combination.

The Task Group identified many positive features of **Shibboleth**,<sup>4</sup> however the current **Shibboleth** implementation model does not allow for mediated access to controlled resources, as required by a user performing a metasearch of several distributed resources. **NISO** representatives from the Task Group are working with the **Shibboleth** developers to incorporate metasearch authentication needs into the next version of the specification.

### Collection and Service Descriptions Draft Standards

The Collection and Service Description committee has issued two draft standards for trial use (DSFTU):

**NISO Z39.91-200x**, *Collection Description Specification*<sup>5</sup>

**NISO Z39.92-200x**, *Information Retrieval Service Description Specification*<sup>6</sup>

While each specification can be implemented independently of the other, the two specifications are inter-related — a collection is made available by one or more services — and will ideally be used together in field implementations.

The *Collection Description Specification* takes the form of a **Dublin Core Application Profile**,<sup>7</sup> a specification of how metadata terms from the **Dublin Core** metadata vocabularies are used to construct a description of a collection in accordance with the **DCMI Abstract Model**.<sup>8</sup> This metadata can be used by humans to discover and select collections and also by software agents such as metasearch engines performing such tasks on behalf of human users. The standard also specifies an **XML** binding for serializing such descriptions for interchange between applications.

In her presentation at the **NISO Metasearch** workshop, **Grace Agnew**<sup>9</sup> (**Rutgers University**) described three possible use scenarios if the collection description specification were implemented:

- A human user pre-limits a search of many collections through selected collection-level data elements, such as “type” and “temporal coverage.”
- A Library uses collection-level data records to automatically generate “dynamic subject portals” as databases and collections are added to its collection.
- An Internet search engine uses collection descriptions to provide “intelligent” collection searching, based upon ranked data elements.

The *Information Retrieval Service Description Specification* defines a method of describing Information Retrieval oriented electronic services, including but not limited to those services made available via the **Z39.50**,<sup>10</sup> **SRU/SRW**,<sup>11</sup> and **OAI**<sup>12</sup> protocols, to be used by applications to determine how to access remote services. The standard addresses the need for machine readable descriptions of services in order to enable automatic discovery of and interaction with previously unknown systems. It also specifies an abstract model for service description and a binding to **XML** for interchange.

The committee based the specification on the **ZeeRex** schema<sup>13</sup> developed by **ZING** (**Z39.50 International Next**)

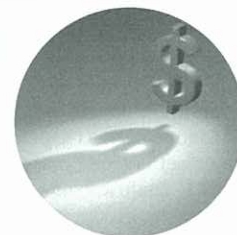


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**Generation**). **Larry Dixon**<sup>14</sup> (**Library of Congress**) explained the purposes of **Zee Rex** at the **NISO Metasearch** workshop:

- to describe information retrieval services,
- to enable aggregation of these descriptions into service registries,
- to enable use in machine-to-machine interactions to allow automatic service discovery, and
- for the exchange of **XML** records for processing by standards-based software agents.

The Collection and Service Description task group intends to work closely with the **ZING ZeeRex** developers as the **NISO** standard is field tested in the event that additional needed elements are identified.

The trial use period for both standards ends on October 31, 2006.

### Search and Retrieval Recommendations

The Search and Retrieval task group issued three recommendations. The first, *XML Gateway Implementers Guide*,<sup>15</sup> describes the **NISO Metasearch XML Gateway (MXG)** protocol, based on the **NISO**-registered **SRU** protocol. **MXG**, which uses URLs sent via **HTTP** to retrieve **XML** responses, provides a low entry barrier method for content providers to interact with metasearch services. While the task group recognized that the longer term goal is some type of standardized query protocol based on **SRU/SRW**, an **XML** gateway provides interoperability methods that can be put into practice today. **Ex Libris** and the **Berkeley Electronic Press**<sup>16</sup> — *bepress* ([www.bepress.com](http://www.bepress.com)) — have already released a metasearch gateway between their products that conforms to the **NISO MXG**.

**Ralph LeVan**'s<sup>17</sup> presentation at the **NISO Metasearch** workshop describes the gateway and identifies three levels of support:

- Level 1: Requests are simple URLs using any query grammar and responses are **XML** records
- Level 2: Add a description record for the database
- Level 3: Support a standard query grammar: **CQL**

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The two other recommendations from the Search and Retrieval task group are metadata elements sets. The *Results Set Metadata*<sup>18</sup> identifies a core set of metadata elements to provide better quality of information returned and ensure more standardized presentation of results to the end user. Elements are defined for both the aggregate level of results and at the individual record level.

The *Citation Level Data Elements*<sup>19</sup> is a minimum set of required citation level data elements to overcome the current lack of standardization in the way a citation is formatted in a record. Use of these data elements will allow citation information to be parsed for re-use in applications such as **OpenURL** linking. The element set is taken extensively from **Dublin Core 0.1**, qualified for citations from the citation working group, however, it adds the descriptive components needed for "Full Display" and text analysis done by metasearch engines.

### Next Steps

The **Metasearch Initiative** work continues with follow-up to the initial recommendations and review of outstanding issues that require additional action. The Access Management task group is working closely with the **Shibboleth** project to come up with a more robust authentication methodology for metasearch applications that will address "delegated" authentication.

The Collection and Service Descriptions task group is seeking participants in test implementations of their two draft standards. They are exploring methods such as registries for facilitating collection description and service description exchanges. They will also be in close contact with the **ZING ZeeRex** committee regarding any issues that come up during field testing of the **Information Retrieval Service Description Specification**.

The Search and Retrieval task group will be promoting the **XML** gateway and the metadata element sets to content providers and are considering an implementers group. The group has also made contact with the **OpenSearch/A9** project about utilization of the **SRW/SRU** specification.

Anyone interested in metasearch or any of the activities of the **Metasearch Initiative** is encouraged to join one of the task groups or to become a field test site for the recommendations. Contact **NISO** headquarters (*niso@niso.org*) or the **MI** task group chairs if you would like to participate in the Initiative. Visit the **MI** Webpage [http://www.niso.org/committees/MS\\_initiative.html](http://www.niso.org/committees/MS_initiative.html) for further information and copies of the recommendations.

Task group chairs:

Access Management, **Michael Teets** <teetsm@oclc.org>

Collection and Service Description, **Juha Hakala** <juha.hakala@helsinki.fi>

Search and Retrieval, **Katherine Kott** <kkott@stanford.edu> and **Sara Randall** <sara.randall@endinfosys.com>



### Endnotes

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### Rumors

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in false advertising because it claims to use the services of **Copyright Clearance Center** ([www.copyright.com](http://www.copyright.com)). According to the plaintiffs, **Research Associates** had formerly used CCC services but failed to do so starting in early 2005. [biz.yahoo.com/bw/060515/20060515006001.html?v=1](http://biz.yahoo.com/bw/060515/20060515006001.html?v=1) [www.blackwell-synergy.com](http://www.blackwell-synergy.com) [www.wiley.com](http://www.wiley.com) [www.elsevier.com](http://www.elsevier.com)

Was recently talking to the dynamo **Karen Christensen** <karen@berkshirepublishing.com> of **Berkshire Publishing** in Great Barrington, MA. Did you know that **W.E.B. DuBois** grew up in Great Barrington (and used to sled by **Karen's** house)? Anyway, besides the **Libraries We Love** project (fantastic!), they have just launched the first general publication designed to help people become China hands. *Guanxi: The China Letter* is a

monthly journal ([www.guanxionline.com](http://www.guanxionline.com)). The legendary Asia studies scholar, **Wm. Theodore de Bary** of Columbia, has contributed the lead article to issue two, on education. [www.berkshirepublishing.com](http://www.berkshirepublishing.com)

Was walking across campus when I ran into **Larry Carlson** <carlsonl@cofc.edu>, Chair of the English Department at the **College of Charleston**. Come to find out that **Larry's** wife, **Barbara Carlson (Bobbie)**, who is a librarian just won a big award! **Beth Fitzsimmons**, Chairman of the **U.S. National Commission on Libraries and Information Science (NCLIS)**, announced the winner of the **2006 NCLIS Health Information Award for Libraries**. Chosen from entries from throughout America, **South Carolinas REACH 2010 program** was judged the best library program for encouraging healthy lifestyles and providing health information to the citizens. Organized and managed by the **Charleston and Georgetown Diabetes Coalition's Library Partnership**, South Carolina's **REACH**

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