

## Z39.50 IS IN YOUR FUTURE

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**ABSTRACT:** Z39.50 is a protocol and a buzzword to be reckoned with when purchasing library automation. This presentation will provide a consumer's view of Z39.50. Definitions and explanations will be given, as well as an update of the literature and status of the protocol in the ZIG groups. In 1996 Library Technology Reports noted that the discussions of the standard was most active in the United States. Today there are groups working on profiles and implementing working systems all around the world. This author is a member of the Texas Z39.50 Implementers Group (TZIG). The work of that group and its accomplishments in relation to other active groups will be discussed. Learn how a dedicated group of librarians in Texas propose to work with vendors to implement Z39.50.

### Introduction

Z39.50 is a protocol or a set of rules, which when incorporated into a client/server computer network, allows users to search and retrieve information from disparate computer systems (Thomas 1999). This idea was inspired in 1984 from the desire to search more than one database using only one interface. The National Information Standard Organization (NISO) developed the standard. NISO is the only standards organization sanctioned by the American National Standards Institute (ANSI) to approve standards for information services (Turner 1997).

### Purpose

The standard came about to solve the challenge of providing information from multiple sources or servers. Z39.50 refers to servers as targets. The client is an origin. This standard has been developed to work in the client/server evolution of computing and Internet networking (Turner 1997). The Z39.50 Implementors Working Group (ZIG) is made up of librarians, vendors' representatives, and other information specialists (Library of Congress 1999).

In order to get the computers to do the multiple database searches, client software was developed to talk to servers using attribute sets. A list of attribute sets included in the Standard consists of Bib-1, Exp-1, Ext-1, CCL-1, GILS, and STAS. The Bib-1 attribute set provides all of the possible attribute types and values to search and retrieve from MARC records. The types consist of use, relation, position, structure, truncation and completeness attributes. The values assigned to attributes define the search and retrieval expected. A compilation of the desired attribute sets makes a profile (ANSI/NISO 1995).

## Profiles

Profiles are developed to fit the perceived needs of the users of the institutions represented. One such group is the Texas Z39.50 Implementors Group (TZIG).

An interested group of Texas librarians met under the leadership of William E. Moen, Ph.D., assistant professor, School of Library and Information Sciences, University of North Texas, and Christine Peterson, manager, continuing education and consulting, Texas State Library. The TZIG Profile (TZIGP) is nearing the final phase of development towards acceptance by the Texas Z39.50 Implementors Group (TZIG 1999). With further consensus from the Texas Library Association, Texas librarians will have an instrument to share with vendors when acquiring Z39.50 capabilities.

All of the probable combinations of the attribute types and values are used to define searches and retrievals expected of TZIG users. For instance, it was decided that an author search would comprise the following combinations of attributes (see Figure 1).

“Use”, “Relation”, “Position”, “Structure”, “Truncation”, and “Completeness” are attribute types. “Use (1)” translates from the Standard as Use Attribute Type valued as 1 with designated use value of 1003. 1003 has a Name Attribute of “author”. We are interested in mapping to USMARC records for Functional Area A, category 1 Searching. We also provided the USMARC tags for more uniform mapping between all origins and targets participating (TZIG 1999).

“Relation type,” with a value of 2 is given a name attribute of “equal” which has a value of 3. The other value choices in the Bib-1 attribute set are “less than,” “less than or equal,” “equal,” “greater or equal,” “greater than,” “not equal,” “phonetic,” “stem,” “relevance,” and “AlwaysMatches” (NISO/ANSI, 1995, P. 82).

A group of interested people participated in a meeting in August, 1999 in Bath, England and worked to further solve “interoperability issues when searching library catalogues.” They also wanted to develop “an international specification for Z39.50 to be used in library applications.” The TZIG Profile was considered a resource document at that meeting. Their “Bath Profile” will be available for comment by the time this article is published. It will be posted to the Z39.50 Maintenance Agency web site when it is available (Bath Meeting Participants 1999).

The significance of The Bath Profile is that the TZIG was privileged to review it before publication. This review has raised questions about the relevance of some attribute choices made in the "TZIG Profile". An example of this is the position attribute. "First in subfield" was removed because no one could identify an author subfield that is indexed separately in Texas library systems.

Other profiles available are now listed on the Z39.50 Maintenance Agency. A section of that web site lists "Inter-national, National, and Regional Inter-operability Profiles" (Library of Congress 1999). "The Bath Profile" mentioned above is the first attempt to make a global profile. The significance of this is to provide the information industry a very basic profile to be shared by all systems. Sites could also then provide for more specific and/or regional needs.

The guiding philosophy is to make the profiles modular, backwards compatible and interoperable. This principle was made a part of the process of developing the Z39.50 protocol with Z39.50-1994. Z39.50-1995 is backward compatible with Z39.50-1994 (NISO 1995).

### **Implementations**

Fay Turner's web page [<http://www.nlc-bnc.ca/resource/vcuc/z3950ap.htm>] provides several sites to help answer questions about the application of Z39.50. Several vendors provide Z39.50 products. *Library Software Review*, *Library Technical Reports*, *Database*, *Computers in Libraries*, *Bulletin of the American Society for Information Science*, and *Communications of the ACM* have all run recent articles about Z39.50 or about products providing the service.

The protocol is evolving more rapidly now. The ever-increasing capacity of computers and networking is providing the resources to allow even the smallest libraries to participate. Many vendors have independent clients available. Several vendors have full systems of clients, gateway clients, and servers available. Members of both of these groups will make their products available separately. That is, it is not necessary to purchase client and server to have Z39.50 access. It is necessary, however, to make sure that the product is interoperable with servers on different operating systems from different vendors. One way to make sure that this is true, of course, is to check it out. More difficult though is to know if the software will be updated as the standard evolves.

A contract must specify that the software will be kept in compliance with the latest edition of the Z39.50 standard. It must also be kept compliant or provide the options for the customer to keep the system compliant with the latest edition of the specific profiles.

### **Conclusion**

Z39.50 is a protocol that has been around since 1988. Its use allows the use of one interface to search and retrieve information from many targets. Even though the targets

are on different operating systems and in different programming languages, the information from a MARC database may still be available.

This protocol uses attributes, attribute sets, and profiles to determine the specifications for different searches and retrievals.

To dramatize the expected results, a client in Beaumont, Texas could set up a search for the topic Z39.50, select databases from several places around the world, hit the enter key to start the search and within minutes receive hundreds of citations and full text articles. The client may be set up to sort the results set, delete unwanted hits and print out a bibliography.

There are many implementations of the Z39.50 protocol. Resources are listed to find information about the growing number of vendors and libraries that provide multiple database searching.

### Resources

Bath Meeting Participants. "The Bath Profile: An International Z39.50 Specification for Library Applications and Resource Discovery". <http://www.unt.edu/women/ProfileDraftForReview15sep99.htm>] In William E. Moen, PhD [<http://www-.unt.edu/women/>], 1999.

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Turner, Fay. [[fay.turner@nlc-bnc.ca](mailto:fay.turner@nlc-bnc.ca)]. "An Overview of the Z39.50 Information Retrieval Standard." In International "Federation of Library Associations and Institutions; Activities and Services" <http://www.ifla.org/VI/5/op/udtop3/-udtop3.htm>. January, 1997.

### Sample Attribute Set

Type Attribute	Values Attribute	Names Attribute	USMARC Fields Indexed
Use (1)	1003	author	100,110,111,400, 410, 411, 700, 710, 711, 800, 810, 811
Relation (2)	3	equal	
Position (3)	1,2	first in field first in subfield	
Structure (4)	101	normalized	
Truncation (5)	1	right truncation	
Completeness (6)	1	incomplete subfield	

Figure 1. Sample Attribute Set from the TZIG Profile

