AN OVERVIEW
OF THE Z39.50
INFORMATION RETRIEVAL
STANDARD

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The IFLA Core Programme on Universal Dataflow and Telecommunications (UDT) seeks to facilitate the international and national exchange of electronic data by providing the library community with pragmatic approaches to resource sharing. The programme monitors and promotes the use of relevant standards, promotes the use of relevant technologies and monitors relevant policy issues in an effort to overcome barriers to the electronic transfer of data in library fields.

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AN OVERVIEW OF THE Z39.50 INFORMATION RETRIEVAL STANDARD

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INTRODUCTION

Z39.50 is an American national standard for information retrieval. It is formally known as ANSI/NISO Z39.50-1995 - Information Retrieval (Z39.50); Application Service Definition and Protocol Specification. This document specifies a set of rules and procedures for the behavior of two systems communicating for the purposes of database searching and information retrieval. As a network application standard, Z39.50 is an open standard that enables communication between systems that run on different hardware and use different software.

The Z39.50 standard was developed to overcome the problems associated with multiple database searching such as having to know the unique menus, command language, and search procedures of each system accessed. Z39.50 simplifies the search process by making it possible for a searcher to use the familiar user interface of the local system to search both the local library catalogue as well as any remote database system that support the standard.

The latest edition of Z39.50 was approved in 1995 by the National Information Standards Organization (NISO), the only organization accredited by the American National Standards Institute (ANSI) to approve and maintain standards for information services, libraries and publishers.

Z39.50 is also recognized world-wide and will soon become an international standard replacing the Search and Retrieve (SR) Standard approved by the International Organization for Standardization (ISO) in 1991. The new ISO Standard will be known as ISO 23950.

OVERVIEW AND DESCRIPTION

Z39.50 corresponds to the client/server model of computing. In this model, two computers interact in a peer-to-peer relationship with each computer having specific tasks for the function being performed. In Z39.50 the client is known as the "Origin" and is that part of the local system which interfaces with the database in the remote system and responds to messages received from the Origin system, such as providing records that correspond to the search query.

A searcher enters a query into the local system using that system's set of menus and command language. The Z39.50 Origin module located in the local system translates the query into a standardized format defined by Z39.50 and sends it to a database system that has a Z39.50 Target. The Target presents the commands and search queries to the database and returns the results in a standardized format to the Origin which initiated the search.

One of the outstanding advantages of using Z39.50 is that it does not require the searcher to be familiar with the details of the standard. The Origin module within the searcher's system is responsible for establishing the connection to the Target system, formulating the query according to the Z39.50
standard, interpreting the results in a format familiar to the searcher, keeping track of the results, terminating a search session, etc. In fact, the searcher would only have to know one set of commands to search both the local catalogue as well as remote library catalogues.

The Z39.50 method of information retrieval is radically different from the traditional method commonly employed for database searching whereby a searcher uses a local terminal or computer to log into a remote system and then uses that system's unique menus and command language. This requires training and expertise in the unique features of each system selected in order to perform searches efficiently. The implementation of Z39.50 eliminates the need for expertise in the use of a large number of dissimilar systems and training in the use of each.

The Origin and Target communicate using the connection-mode of communications in which both systems are directly linked in a dialogue known as a Z39.50 association. Protocol services are invoked in the local origin system which are then transmitted as messages or APDUs to the remote Target system. Examples of Z39.50 services include a request to begin a Z39.50 session (INIT), the search query (SEARCH), and a request for specific records from a list which correspond to the search query (PRESENT). In North America, the Internet is the communication network used to transmit Z39.50 messages.

Z39.50 not only standardizes the messages to be exchanged between the Origin and Target systems, but also the structure and semantics of the search query, the sequence of message exchange, and the mechanism for returning records. The rules and procedures defined by Z39.50 enable systems that run on different hardware and use different library software to interwork to perform numerous task relating to information retrieval. No matter what the underlying platform or library software used, systems are able to participate in an information retrieval session providing both systems support the Z39.50 standard. Z39.50 can be used for a wide range of library functions that require database searching, from cataloguing to interlibrary loan to reference. It can be used with bibliographic databases as well as with other types of databases such as those containing the full text of documents and images.

Z39.50 VERSIONS 2 AND 3

Z39.50-1995 contains version 2 and 3 of the standard. Version 2 was published in 1992 as ANSI/NISO Z39.50-1992. It supports basic capabilities for bibliographic searching and information retrieval, primarily of MARC bibliographic records. The standard is capable of building simple and complex search queries using a wide range of query qualifiers and search terms. However, version 2 does not support features currently available in some very sophisticated systems nor can it be conveniently used for non-bibliographic records. The developers of the Z39.50 standard have therefore developed another version of the standard, version 3, which incorporates many more features to support both bibliographic and non-bibliographic searching. The 1995 edition of the standard has been designed so that version 3 compliant systems are downwardly compatible with version 2 compliant systems.

THE Z39.50 IMPLEMENTORS' GROUP (ZIG)

The group responsible for the development of versions 2 and 3 of Z39.50 is the Z39.50 Implementors' Group (ZIG). The ZIG meets approximately three times a year to discuss improvements to the standard and to resolve implementation and interoperability issues. At its first meeting in March 1990, there were 11 American institutions present as well as the National Library of Canada. ZIG meetings now attract over 100 participants committed to implementing the standard. They represent libraries, universities, CD-ROM and library system vendors, publishers, consultants, information service vendors and bibliographic utilities. The ZIG membership is open to all interested parties.

IMPLEMENTATIONS

Over the past few years there has been tremendous Z39.50 implementation activity in North America and Europe. Many of the major library software vendors, including DRA, Geac, Ameritech, and VTLS have implemented the standard while other are in the process of producing Z39.50 compliant products. Other implementations include those by the bibliographic utilities (OCLC, RLG, ISM Library Information Services), the academic community (Acadia University, University of California, University of Florida), the commercial sector
Z39.50 INFORMATION ON THE INTERNET

Discussion List

To subscribe to the Z3950iw listserv send the message: to listserv@nervm.nerdc.ufl.edu

To send messages to the list, use the address z3950iw@nervm.nerdc.ufl.edu.

Z39.50 Maintenance Agency

URL: http://lcweb.loc.gov/z3950/agency/

This site at the Library of Congress provides information on the following topics:

- The ANSI/NISO Z39.50-1992 document
- The ANSI/NISO Z39.50-1995 document
- Z39.50 Register of Implementors
- Z39.50 Profiles
- Public Object Identifiers
- Registered Objects and other Definitions
- Extensions
- Changes to Z39.50-1995
- Clarification and Interpretations
- Implementor Agreements
- Version 3 Baseline Requirements
- Z39.50 Implementors Group (ZIG)
- Interoperability Testing
- Articles, tutorials, etc. and Bibliography
- Version 4 development

Z39.50 Resource Pages on the Web

Internet Searching With Z39.50
URL: http://www.markkelly.com/z3950/

Z39.50 Client and Web Gateway Survey
URL: http://www.dstc.edu.au/RDU/reports/zreviews/

Z39.50 - a Pointer Page
URL: http://ds.internic.net/z3950/z3950.html

List of Z39.50 Compliant Library Systems
URL: http://www.bookwhere.com/hosts.htm

NL C Z39.50 toolkit software

The National Library of Canada has produced a suite of public domain software for Z39.50-1992 (version 2). The software was initially released in September 1993 and a maintenance release was produced in July 1994. The software suite consists of:

- a kernel implementation of the Z39.50 protocol engine for the Origin
- a kernel implementation of the Z39.50 protocol engine for the Target
- a set of API specifications for interfacing with the software at several levels, i.e. communications, protocol kernel, user process, user interface
- CanSearch, a complete Origin system for MS-Windows

The Z39.50 software was developed for the National Library of Canada by Software Kinetics Limited (Stittsville, Ontario, Canada) and is being made freely available to encourage the use of Z39.50 by the bibliographic community. Users are granted a royalty-free non-exclusive license to use, modify, reproduce and sell the software. The software is no longer maintained by the National Library of Canada.

The software and documentation is available on the Internet via anonymous ftp from National Library of Canada.

To access: FTP to ftp.nlc-bnc.ca

User name: anonymous
Password: guest

Directory: public/irtool
- target
- origin


For more information about the National Library of Canada's Z39.50 activities, please contact:

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