Institute of Museum and Library Services National Leadership Grant

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Realizing the Vision of Networked Access to Library Resources

An Applied Research and Demonstration Project to Establish and Operate a Z39.50 Interoperability Testbed



Status Report to The Institute of Museum and Library Services

July 1 through December 31, 2002

William E. Moen, Ph.D.
<wemoen@unt.edu>
Principal Investigator
School of Library and Information Sciences
Texas Center for Digital Knowledge
University of North Texas
Denton, TX 76203

January 1, 2003

Introduction

This document provides a status report on the Z39.50 Interoperability Testbed Project (Z-Interop) covering the period of July 1, 2002 through December 31, 2002. The previous status report covered a three-month period from April 1, 2002 through June 30, 2002. This document highlights activities and accomplishments to communicate to IMLS progress on our project since the last status report.

Accomplishments and Challenges

This section summarizes the key accomplishments and challenges. Subsequent sections discuss these in more detail.

Accomplishments

- Processed requests from three Z39.50 vendors/developers to participate in Z-Interop testbed (August – September 2002)
- Processed requests from two libraries to participate in Z-Interop testbed (July – October 2002)
- Successfully carried out interoperability testing of three Z39.50 vendor/developer's Z39.50 server implementations (September – December 2002)
- Successfully carried out interoperability testing of two Z39.50 client implementations (one vendor's system, one library's systems).
- Refined procedures to analyze and report interoperability testing results (July – December 2002)
- Developed interoperability test scenarios for truncation searches and simple Boolean searches.
- Publicized the testbed through presentations (April – June 2002).

Challenges

- Developing procedures for preparing test scenarios for phrase searches as defined in the Bath and U.S. National Z39.50 Profiles
- Encouraging more participation in testbed.

Project Personnel

The Principal Investigator (PI) has committed time to the project throughout this period with a 40% effort in Summer 2002 and 20% effort in Fall 2002.

Two Ph.D. students comprise the core of the Z39.50 Interoperability Testbed Team (Z-Team). One has the responsibility to oversee the programming and automatic processing of data analysis. The other has the responsibility to oversee the interoperability testing, analysis, and report writing of results.

The PI hired a computer science Masters student in September to assist in programming tasks. In addition two School of Library and Information Sciences Masters students were hired (one in September and one in December) to assist with the interoperability testing and ongoing analysis of the test dataset respectively.

Total staff working on the Z-Interop as of December 31, 2002:

- 2 graduate students (Ph.D. students) working 20 hours per week
- 1 graduate student (Masters student) working 20 hours per week
- 1 graduate students (Masters student) working 15 hours per week
- 1 graduate student (Masters student) working 10 hours per week

These students comprise the Z-Team.

Project Management

The PI has overall project management responsibilities for scheduling work, keeping Z-Team members on task, disseminating information about the project, and moving forward with further development of test scenarios. The PI communicates regularly with each of the Z-Team members via email.

Project Schedule

The development and implementation of more complex searches occurred during this period, and the result was a set of test queries for simple Boolean searches and right truncation searches. The Z-Team continues to address the complexity of developing test queries for phrase searches (as defined in the Bath and U.S. National Z39.50 Profiles. Due to the challenges posed by these types of searches, the PI anticipates these test searches will be finalized by early Spring 2003.

The approval by IMLS to extend the project through September 30, 2003 will enable the Z-Team to have a full set of test searches to address the Bath and U.S. National Z39.50 Profiles search requirements (Levels 1 and 2) by the end of the project.

Interoperability Testing

During this reporting period, interoperability testing was conducted with the following systems:

- epixtech Dynix Z39.50 server implementation
- epixtech Horizon Z39.50 server implementation
- Innovative Interfaces Z39.50 server implementation
- Fretwell Downing Z39.50 client implementation
- Saskatchewan Provincial Library Z39.50 client implementation.

For testing the Z39.50 server implementations, the following test search types were used; the specifications for these searches are defined in the Bath and U.S. National Z39.50 Profiles:

- Author keyword (Profile Functional Area A, Level 0)
- Title keyword (Profile Functional Area A, Level 0)
- Subject keyword (Profile Functional Area A, Level 0)
- Any keyword (Profile Functional Area A, Level 0)
- Simple Boolean author keyword (Profile Functional Area A, Level 0)
- Simple Boolean title keyword (Profile Functional Area A, Level 0)
- Simple Boolean subject keyword (Profile Functional Area A, Level 0)
- Simple Boolean any keyword (Profile Functional Area A, Level 0)
- Author keyword right truncation (Profile Functional Area A, Level 1)
- Title keyword right truncation (Profile Functional Area A, Level 1)
- Subject keyword right truncation (Profile Functional Area A, Level 1)
- Any keyword right truncation (Profile Functional Area A, Level 1)

The initial interoperability testing conducted in May – June 2002 confirmed the logic and procedures of the testing, the testing during this reporting period used an increased number of test searches.

Testing Z39.50 servers includes the following steps:

- Issue test searches to the interoperability testbed participant
- Retrieve results of the searches from the participant's server implementation
- Pass the results through a series of automatic processes for comparison against the benchmarks for each search
- Automatically create a summary report of the results of the automatic processing
- Manually examine the results to identify differences between the participant's results and the established benchmarks for each search.
- Develop report that presents the interoperability testing results.

The report of results is then shared with the interoperability testbed participant. As an example of this report, see the document that provides results of testing with the epixtech Horizon Z39.50 server implementation at:

<http://www.unt.edu/zinterop/InteropTestReports/HorizonReport1Dec2002.doc>

Participants are requested to review the draft report and communicate with the PI any concerns or questions they have about the results.

Testing an interoperability testbed participant's Z39.50 client implementation includes the following steps:

- Provide the participant with a list of test searches
- Participant issues the test searches to the Z39.50 Interoperability Testbed Reference Implementation Z39.50 Server
- Two log files on the reference implementation Z39.50 server record all received searches and their specifications
- Manual inspection of the log files by a Z-Team member to compare received search specifications with the specifications defined by the Bath and U.S. National Z39.50 Profiles
- Develop report that presents the interoperability testing results.

The report of results is then shared with the interoperability testbed participant. As an example of this report, see the document that provides results of testing with the Fretwell Downing Z39.50 client implementation at:

<http://www.unt.edu/zinterop/InteropTestReports/FretwellDowningReport13Nov2002.doc>

Participants are requested to review and raise any questions about the results of the testing of their Z39.50 client.

The Z-Team continued to refine the automatic processes and reporting forms to improve the efficiency of the testing, analysis, and report writing.

Project Website and Information Dissemination

The project website <http://www.unt.edu/zinterop/> continues to serve as our vehicle for promoting and publicizing the project. In addition, we use the website to publish project documents and for online collection of information from potential testbed participants.

The PI made presentations at several conferences and meetings to publicize and describe the Z39.50 Interoperability Testbed Project. In all cases, the support from IMLS for this project was clearly communicated. The following lists conferences and meetings at which the interoperability testbed was discussed as part of the presentation:

- Access 2002, Windsor, Ontario, Canada (October 2002)
- Netspeed 2002, Calgary, Alberta, Canada (October 2002)
- Coalition for Networked Information, Fall Task Force Meeting, San Antonio, Texas (December 2002)

Project Technology and Software

No additional technology or software was acquired during this period.

Project Documentation

The project staff continued to develop documentation for the testbed. The following documents were created or refined/revised during this reporting period:

- Standard report format to issue interoperability testing results to individual participants
- Detailed documentation of the various scripts, programs, and procedures that are used to automatically process the interoperability testing results
- Detailed description of setting up the Z39.50 client reference implementation for testing.
- Detailed description of the steps and procedures using in using the Z39.50 client reference implementation for testing and the analysis procedures for determining the results
- Detailed description of establishing the benchmarks for each of the test searches
- Procedures for issuing test searches from interoperability participant's Z39.50 client implementation.

It is important in building trust in the testbed that all procedures and policies of the testbed are publicly available.

Summary and Next Steps

During the past six months, we continued to refine the operation of the interoperability testbed. Interoperability testing now includes a set of right truncation and Boolean test searches. Feedback from interoperability test participants informed revision to the reports of interoperability test results. Continued automated processing modules are helping to reduce the time for analyzing interoperability test results. These and other project activities are laying a solid foundation for the operation of the interoperability testbed.

As an indication of the utility of the Z39.50 Interoperability Testbed, the PI received an email from Ed Riding of epixtech in response to receiving the results of testing epixtech's Horizon Z39.50 server implementation. The following is copied from the email message:

> Subject: RE: Interop test results for Horizon
> Date: Mon, 2 Dec 2002 08:53:12 -0700
> From: "Ed Riding" <ERiding@epixtech.com>
> To: "William E. Moen" <wemoen@unt.edu>, "Rob Madsen" <RMadsen@epixtech.com>
>
> Bill,
> We thank you and your staff for the thorough testing and reporting of test results. You have provided very valuable information for us in refining our Zserver software. We look forward to the results of the Dynix test. Thanks again for all the planning and execution you've done to provide greater accuracy in cross-system search and retrieval.
> - Ed

It will be a goal of the Z39.50 Interoperability Testbed project to develop support for the testbed by providing a valuable service to the library community and the Z39.50 implementors.

Developing validated test searches for phrase-type searches still presents challenges, an the Z-Team will continue working on these searches with the expectation the test searches will be ready for use in early Spring 2003.

The Z39.50 Interoperability Testbed will play an important role for another of the PI's projects. The PI is working with the Texas State Library and Archives Commission on its Library of Texas initiative. The Library of Texas is moving into an implementation phase of a resource discovery service, and the interoperability testbed will be used to assess support of vendors' Z39.50 servers that will be deployed as part of the Library of Texas Resource Discovery Service. Information about this effort can be found at: <http://www.unt.edu/zlot>.