"Cyber Synergy: Seeking Sustainability through Collaboration between
Virtual Reference and Social Q&A Sites"
IMLS Interim Performance Report
October 31, 2013

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Interim Performance Report: From November 1, 2012 to October 31, 2013

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1.0 Performance Description

1. a. PURPOSE OF PROJECT:

Cyber Synergy: Seeking Sustainability through Collaboration between Virtual Reference and Social Q & A Sites is investigating the possibility of a new model that enables Virtual Reference Services (VRS) to remain viable despite today's environment of reduced resources. It is exploring the possibility of seamless collaboration between knowledge institutions such as libraries and the Social Q&A (SQA) community. Within the library environment, VRS are evolving, with new developments coming at a quickening pace to enhance the user experience, and allowing access to library services through mobile devices and via social networking sites. The reduction of library budgets increases the need to determine opportunities to share resources and generate revenue through collaboration. SQA services provide a different approach that harnesses crowd-sourced expertise in a one-to-many, instead of a one-to-one model that features experts (librarians). This research activity will provide evidence for modeling future library collaborative services. The project's three phases will identify VRS system enhancements to help achieve sustainability and to collaboratively leverage subject knowledge to meet user needs and heightened expectations.   This project spans from October 1, 2011 to September 30, 2014.

1. b. RESEARCH ACTIVITIES

✓ **IRB Approval and Human Subjects Certifications: IRB approval from Rutgers University** was necessary prior to starting the grant and was accomplished in 11/8/2011. All members of the grant team have received Human Subjects Certification.

✓ **Phase I** consists of transcript content analysis of 560 randomly selected transcripts from OCLC Question Point's (QP) VRS and 1000 randomly sampled Q & A pairs from Yahoo! Answers, which were made anonymous and are undergoing several analyses to address the proposal's research questions. There are two subgroups of the 560 VRS transcripts: 350 live chat and 210 Qwidget (QW) Instant messaging (IM) transcripts, collected from a corpus of 296, 158 June 2010 through December 2010. The 1000 Q&A pairs from Yahoo! Answers were collected from a corpus of 1+ million September 2007 through February 2010. The transcripts were analyzed with modified methods and coding schemes developed during the *Seeking Synchronicity* IMLS-funded project.

✓ **Phase II** consists of in-depth individual telephone interviews with 98 subjects composed of 48 users of QP live chat and QW, users and expert users of SQA services, and 50 VRS librarians. The telephone interview instrument was informed by findings from *Seeking Synchronicity* and *Cyber Synergy* literature and research questions. VRS librarians as well as SQA and VRS users have been recruited through a variety of methods (see below).
  - VRS Users
    - A pop up message was posted on Maryland AskUsNow! VRS and recruitment emails were sent through several university list-servs with help from our external advisory board members. Some VRS librarian participants posted the recruitment email to VRS users through their list-servs.
  - VRS Librarians
    - A recruitment email was sent through the list-serv for QuestionPoint librarians and posted on the dig_ref list-serv for VRS librarians.
  - SQA Users
    - A recruitment email was sent out through Kent State University, Fairleigh Dickenson University, and Rutgers University list-servs. Flyers were posted at several universities and public libraries. Also a snow-ball sample was used with help from our external advisory board and grant-team.

✓ **Phase III** focuses on creating design specifications to link VRS and SQA to explore solutions for improved collaboration and sustainability in VRS. This phase includes collecting data through three participatory design sessions with 17 policy makers, designers, system experts, and librarians. Two sessions were conducted at

Rutgers University, New Brunswick, NJ, with some participants attending via video conferencing through Google Hangout. One session was conducted at the 2013 ALA Annual Conference in Chicago.

TIMELINE UPDATES

All data collection has been completed for all three phases of this project, including selection of transcripts, interviews with VRS librarians, VRS and SQA users, and the design sessions. Analysis of this large amount of qualitative and quantitative data is in progress. We are on target for our revised timeline and anticipate having no difficulty in concluding all analysis, finalizing results, continuing to write and revise articles for publication, and dissemination of results by October 31, 2014

Transcript Analysis: Analysis of 560 VRS transcripts has been completed for Accuracy, Type of Question, Educational Level/User Type, and Dewey/Subject level, Duration/Time Factors, READ Scale (level of difficulty), Institution, Relational, and Query Clarification. Intercoder reliability (ICR) analysis is completed or in progress. For SQA pairs, the following analyses are in progress: Question type detection, coding for reasons behind question failure, and identifying ways to address difficult or failed questions.

Telephone Interviews: 98 telephone interviews were carried out by nine interviewers.
- 50 VRS librarian in-depth phone interviews have been completed.
    - Interviews investigated librarian's attitude towards current practice and the possibilities of enhanced collaboration and referrals both internal and external to library systems/consortia.
    - Responses to demographic and quantitative questions have been analyzed.
    - Responses to qualitative questions are undergoing line-by-line qualitative analysis to elicit recurring themes and identify representative quotations. Analysis is nearly completed.
- 48 VRS/SQA user in-depth phone interviews have been completed.
    - Responses to demographic and quantitative questions have been analyzed.
    - Responses to qualitative questions are undergoing line-by-line qualitative analysis to elicit recurring themes and identify representative quotations. Analysis is in progress.

Participatory Design Sessions: 17 participants attended three design sessions moderated by the three co-PIs. Several interesting views were expressed and recommendations were identified during analysis of the transcripts and notes, which can influence the development of a hybrid Q&A system. Below is a preliminary list of the recommendations/lessons:
1. Provide question administration
2. Provide searchable archives (variable across platforms)
3. Inform the user of his/her wait time
4. Provide access to answerer expertise and past history
5. Require users to provide some information about themselves in order to use the service
6. Make it enjoyable
7. Have uncluttered aesthetics
8. Provide moderation/quality control (variable across platforms)
9. Make it hybrid (e.g., SQA and VR in one service)
10. Allow the user to customize his/her results
11. Provide help at the time of need

1. c. PROJECT OUTPUTS AND ACTIVITIES
Article in Refereed Journal
Radford, M. L. & Connaway, L. S. (2013). Not dead yet! A longitudinal study of query type and ready reference accuracy in live chat and IM reference. *Library & Information Science Research, 35*(1), 2-13. [Available: http://www.oclc.org/resources/research/publications/library/2012/radford-connaway-lisr.pdf] (Note: won the 2013 ALISE/Bohdan S. Wynar Research Paper Competition, Data from Seeking Synchronicity and Cyber Synergy).

Online Proceedings for Refereed Papers/Panels:
Radford, M.L., Connaway, L.S., Mikitish, S., Alpert, M., Shah, C. & Cooke, N. (2013). Conceptualizing collaboration and community in virtual reference and social question and answer services. Information Research, 18(3) paper S06. [Available at http://InformationR.net/ir/18-3/colis/paperS06.html]

Radford, M. L., Connaway, L. S., & Shah, C. (2012). Convergence and synergy: Social Q&A meets virtual reference services. Proceedings of the 75th Annual Meeting of the American Society for Information Science and Technology, October 26-31, 2012, Baltimore, MD. Edited by Andrew Grove. Vol. 49. [Available: http://www.asis.org/asist2012/proceedings/openpage.html]

Shah, C., Radford, M.L., Connaway, L. S., Choi, E., & Kitzie, V. (2012). "How Much Change Do you Get from 40$?" - Analyzing and addressing failed questions on social Q&A. Proceedings of the 75th Annual Meeting of the American Society for Information Science and Technology, October 26-31, 2012, Baltimore, MD. Edited by Andrew Grove. Vol. 49. [Available: http://www.asis.org/asist2012/proceedings/openpage.html]

Conference Presentations-Refereed Papers
Radford, M., Connaway, L., Shah, C., & Wildemuth, B. (2013). Research Roadshow: Research Design beyond the Ordinary. Peer-Reviewed Panel at Association of Information Science & Technology (ASIST) Annual Meeting, November 1-5, 2013. Montreal, QC, Canada.

Radford, M. L., Connaway, L. S., Mikitish, S., Alpert, M., Shah, C., & Cooke, N. (2013). Conceptualizing collaboration & community in virtual reference and social Q&A. Presented at CoLIS 8 Conceptions (approaches, theories, etc.) of Library and Information Science (LIS), August 19-22, 2013, Copenhagen, Denmark.

Radford, M. L., Connaway, L. S., & Shah, C. (2012). Convergence and synergy: Social Q&A meets virtual reference services. Presented at the 75th Annual Meeting of the American Society for Information Science and Technology, October 26-31, 2012, Baltimore, MD.

Shah, C., Radford, M.L., Connaway, L. S., Choi, E., & Kitzie, V. (2012). "How Much Change Do you Get from 40$?" - Analyzing and addressing failed questions on social Q&A. Presented at the 75th Annual Meeting of the American Society for Information Science and Technology, October 26-31, 2012, Baltimore, MD.

Shah, C., He, D., Radford, M. L., Oh, J. S. & Connaway, L. S. (2013). Collaboration in action: Enabling innovative scholarship with social and crowdsourcing services. Panel presented at the iConference 2013, Fort Worth, TX, February 12-15, 2013.

Radford, M. L., Shah, C., Mon, L., & Gazan, R. (2011). Organizer and member of panel: Stepping stones to synergy: Social Q&A and virtual reference. Presented at the American Society for Information Science and Technology 2011 Annual Meeting, New Orleans, LA, October 9-13, 2011.

Radford, M. L., Connaway, L. S., Mikitish, S., Alpert, M., Shah, C., & Cooke, N. (2013). *Conceptualizing collaboration and community in virtual reference and social question and answer services.* Paper presented at CoLIS 2013: 8: International Conference on Conceptions of Library and Information Science, August 20, 2013, Copenhagen, Denmark.

Shah, C., Radford, M. L., Connaway, L. S., Choi, E., and Kitzie, V. (2012). *"How much change do you get from 40$?"—Analyzing and addressing failed questions on social Q&A.* Paper accepted for presentation at the 75th Annual Meeting of the American Society for Information Science and Technology, October 26-31, 2012, Baltimore, MD.

Participation in Refereed Panel (accepted):
Radford, M. L., Connaway, L. S., Lanclos, D. M., & Radford, G. P. (2013). Inspiring Initiatives in Qualitative Inquiry. Panel accepted for presentation at the Association of College & Research Libraries 2013 conference, April 10-13, 2013, Indianapolis, IN.

Papers in Progress:
Radford, M. L., Juliano, K., Connaway, L. S., & Shah, C. READ Scale Analysis of VRS One of the first applications of READ Scale for level of difficulty applied to VRS. Initial draft is written, revision in progress.

- Expanded CoLIS paper (in progress)
- SQA & VRS users interviews (in progress)
- Design Sessions (under revision)

1. d. RESEARCH OUTCOMES:

Broad interest in research in the Cyber Synergy Research: The Cyber Synergy grant research is receiving a great deal of interest from the library community as well as the SQA community, and the data collection, analysis and dissemination are contributing to research in digital library services. Librarians, trainers, and scholars in the Library and Information Science (LIS) field have expressed their interest in the research and the desire for the research findings to be shared. Calls for VRS librarian participation resulted in instant cooperation and sufficient numbers of respondents within a few days.

1. e. OTHER RESULTS:

The Cyber Synergy project has maintained a website hosted by OCLC since the start of the grant, http://www.oclc.org/research/activities/synergy/default.htm. The number of site visits and downloads continues to indicate a significant interest in our grant research with 917 page views and 770 page visits for the IMLS Supports Cyber Synergy Activity [OCLC Research News] from October 15th, 2012 through October 18th, 2013. The page views indicate the number of times the page was viewed, accounting for visitors that may have clicked back from a page visit.

To date, the results of the research compare specific characteristics of VR and SQA questions, which will inform the construction of design specifications for a collaborative system. The results indicate:

VRS Transcript Analysis:
- Ready reference accuracy in VRS has increased from 75% correct with citation included in 2004-2006 to 90% in 2010, which could possibly be attributed to the recommendations suggested by Connaway and Radford (*Seeking Synchronicity: Revelations and Recommendations for Virtual Reference*, 2011, p. 53-56).
- Most VRS questions are 2-3 on the 6-point READ scale, with 6 representing the most difficult; therefore, some effort and time is required to answer the questions.
- The majority of the VRS questions analyzed are within the subject areas of social sciences (16.8%) and technology (11.59%).
- The Total Average Wait Time for VRS questions is 67 seconds (1.12 minutes), while the Total Average Session Time is 1,126 seconds (18.77 minutes).

SQA Transcript Analysis:
- The main characteristics for the 200 failed SQA questions were spread across categories with significant concentrations in the too complex, overly broad sub-category (n=68, 34%), followed by lack of information (n=28, 14%), relatedness (n=26, 13%), and ambiguity (n=21, 10.5%), while socially awkward (n=8, 4%), excessive information (n=4, 2%), and poor syntax (n=2, 1%) showed less likely primary influence on failure rate.
- A significant proportion of the failed SQA questions from the sample were too complex and/or overly broad (68, 34%). This signifies that a lack of perceived effort on the asker's part to craft a coherent question may cause difficulties in its subsequent interpretation. Moreover, questions from this category often involve topics too complex and/or specialized, which few people could address. We believe this is where a VRS librarian can step in, allowing us to link SQA and VRS.

VRS Librarian Phone Interviews: In analysis of VRS librarian phone interviews, which asked participants to describe their ideal VRS system, the majority gave the following comments or suggestions.
- The information is easy to find or the interface is easy to use and a standard interface.
- Results arrive quickly.
- The system allows for screen casting or a similar service.
- The system lets librarians how who is available and notifies experts that there is questions so that they can a make themselves available.
- Answers to previous questions can be searched and new questions and answers can be added. (This is similar to the saved question and answer pairs in SQA sites.)

Librarians stated that they contact subject experts often (more than once a week) because they feel they do not have sufficient subject expertise to answer the questions. They contact the expert through various modes of communication, which include email, face-to-face, chat, and phone, with email and face-to-face being used the most.

These results suggest that VRS librarians constitute a Community of Practice (CoP) (Wenger, 1998, 2004) in their approach to referrals and collaboration and can inform ways to enhance the sustainability of VRS through enabling easier engagement with other librarians and credentialed subject experts.

2. Certification
In submitting this report, I certify that all of the information is true and correct to the best of my knowledge.

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Co-Principal Investigator   Date