

Expanding Reference Services for the University of California:

**A White Paper on the Relevance of Digital Reference Service
to the UC Libraries**

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prepared by

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Introduction:

Digital reference has the potential to change the face of reference service as we know it, much the way OCLC changed forever the face of technical services functions in libraries 30 years ago. Reference services provided on-site or via telephone or e-mail will continue to be major pieces of a university library's program of public services for the foreseeable future, but digital reference service can widely expand that spectrum of services. It can expand the possibilities for the audience served; the hours of service provided; the staffing arrangements for delivering the service; the physical location from which the service is delivered; and the technology used to deliver the service. Conversely, digital reference service can be used to target reference services more precisely, delivering service to a segment of a user group; limiting the service to certain hours; or connecting to specific resources only.

Digital reference in this paper refers to interactive, real-time (synchronous) reference with remote users. It does not include e-mail reference (asynchronous) unless it is used in conjunction with digital reference. Although reference service 24 hours a day, 7 days a week (24/7) is a concept sometimes associated with digital reference, it is not necessarily the goal.

The impetus for digital reference comes from many fronts. Today's undergraduates are not merely comfortable with computers; many would rather search online than ask a question of a librarian behind a desk. The tendency of students to turn to the Internet instead of to reference librarians is a likely explanation for the decline in reference statistics in academic libraries at a time when the student population has increased. The Association for Research Libraries reports an annual average decline of 1.4% in reference statistics between 1991 and 2000. While the number of on-site reference transactions is decreasing, librarians find that the length of transactions is increasing. Librarians now assist users in locating research materials on the Web via numerous interfaces rather than first turning to paper indexes. Digital reference can greatly facilitate this type of reference, meeting users at point of need.

Another impetus for digital reference is the advent of web-based technological possibilities for using the Internet to interact with library users in real time, using chat, and sometimes voice-IP and video, to share visual images remotely. With these tools, originally developed for commercial, catalog sales operations, the librarian can send or share Web pages with patrons in remote locations and conduct explanatory real-time conversations about what users see. The possibilities for providing assistance and

instruction to remote users is greatly enhanced. Many ARL libraries offer services exploiting this technology.

An environment of mixed electronic and paper resources is typical in university libraries today. The rapid growth in the availability of electronic resources is making more and more of the library accessible to remote users, yet many of the electronic resources are difficult to use. In the UC environment, the decentralization of CDL's database offerings will result in an increased need by both onsite users and remote users for assistance in navigating the many indexing and abstracting databases and electronic publications. Providing digital reference service to remote users coping with this varying array of interfaces and content is akin to offering them literacy and fluency tools to learn to communicate in a new language.

Digital reference service holds intriguing possibilities for advancing public services to the UC community in ways that we have never seen before. Developing such a service would not be a quick or easy process, but that process must begin with a thoughtful examination of the issues and possibilities. In the hope that this White Paper will provide a useful foundation for dialogue on this subject, the SOPAG Task Force on Digital Reference Service is pleased to submit this report in fulfillment of its Charge (see **Appendix E**).

Executive Summary

The report of the SOPAG Task Force on Digital Reference examines general issues surrounding digital reference, surveys relevant technological trends, and makes recommendations based on the task force's findings.

Reference services provided on-site or via telephone or e-mail will continue to be major pieces of a university library program of public services for the foreseeable future, but digital reference service can widely expand that spectrum. The term “digital reference” refers to interactive real-time reference service with remote users. Digital reference can bring professional services to user groups that have not been well served or who may prefer to work online or away from the library, but may also be used to target reference services to specific user groups. Although reference service 24 hours a day, 7 days a week (24/7) is a concept sometimes associated with digital reference, it is not necessarily the goal. In addition, most ARL libraries restrict the service to their primary clientele.

There is interest across the UC system in experimenting with digital reference service. Several UC campuses (UCLA, UCI, UCB, and UCD) are testing or have implemented real-time digital reference services. Though several digital reference systems are on the market, with a wide range of features, no one system currently on the market offers all features desirable for library digital reference. The lack of a single, robust, dependable software to deliver digital reference services in the complex UC digital environment is hindering progress in offering this service.

- *The Task Force on Digital Reference recommends that SOPAG move UC efforts from the study phase to the working phase and appoint a UC Libraries Digital Reference Services Working Group.*
- *The Task Force on Digital Reference recommends that SOPAG charge the proposed UC Libraries Digital Reference Services Working Group to monitor the evolution of software relevant to UC needs, toward the goal of identifying an acceptable software package.*

PART I:

Survey of the Basic Elements of Digital Reference Service in Academic Library Settings

Values:

Any consideration of new models of reference service must begin with the touchstones of traditional reference values, articulated by Ferguson and Bunge in a 1997 article as “respect for users, in all their diversity and complexity...; ensuring effective access to and use of information resources...; continuing need of information users for assistance in gaining access to information sources...; equity and equal access to information...; freedom of choice...; [and] privacy and confidentiality in information seeking and use.”¹ Digital reference offers the opportunity to implement these values exploiting Web technology to connect users and library staff in any physical locations, with little compromise in quality or content. Both verbal and visual communication and content sharing are possible in a number of existing systems.

Policies:

A program of digital reference services must have a framework of well-thought-out policies to support it. Most reference policies that apply to traditional reference also apply to the components of implementing digital reference, as described by Joe Janes at the 2000 RUSA Program on “High Touch or High Tech.”² These policies must embrace scalability, centralization vs. decentralization, training, providing answers to users queries vs. instructing users, evaluation and assessment, marketing and promotion, distance learning, and privacy and confidentiality.

Components of implementing digital reference:

Clientele: The University of California libraries have traditionally given priority to providing service to their “primary clientele,” defined as faculty, staff, and students enrolled in the University of California. In the context of digital reference services, some public universities have expanded service to groups beyond their primary clientele. Others restrict digital reference service perhaps more stringently than in-person reference by requiring valid identification to access the service. Should UC policy remain as is? Decisions on this point must take into account not only staffing considerations but also licensing restrictions on material in the collections.

Staffing: In delivering digital reference, the librarian must answer the question at the time it is received and engage in an interactive dialogue with the user. If libraries add digital reference, in addition to traditional reference, some staffing changes will undoubtedly be necessary. Each library will need to determine how to utilize its reference librarians and

¹ Ferguson, Chris D. and Charles A. Bunge, “The Shape of Service to Come: Value-based Reference Services for the Largely Digital Library,” *College and Research Libraries* 57:5 (May 1997), 252-265.

² Janes, Joe, “‘Associating Continually with Curious Minds’: The Evolution of Reference,” Presentation at the 2000 RUSA President’s Program: Reference 24/7: High Touch or High Tech?, Chicago, June 2000.

support staff to best advantage in digital reference. For some libraries this may be accomplished by a change in hours. For others, it may mean the introduction of, or increase in the use of, tiered service. For still others it may mean funding additional staff.

Technology and scalability: Each library needs to review its mix of technology components and its infrastructure to be sure that they are adequate to implement, enhance or expand digital reference service, including providing resources for library staff to work from home, if desired or necessary. High-speed Internet connections and ergonomic workstations with large monitors aid in providing digital reference service. Libraries that limit service to their primary clientele must have a system of authentication of users in place when such service is implemented. If service is provided to users beyond primary clientele, policies must be developed and followed consistently about what material will or can be shared with non-primary clientele. (**Part II** of this report presents a detailed review of technology issues relevant to digital reference services in ARL libraries today.)

Hours: Hours of service need careful consideration. Should a library offer a full-range of hours from the start, or should it begin with just a few hours of digital reference and expand hours as the need is demonstrated? Recent studies have shown that there are certain windows within which the majority of questions are received, such as between 5:00 p.m. and 1:00 a.m., with the period between 1:00 a.m. and 6:00 a.m. receiving negligible traffic.³ Digital reference could become a means to extend reference service to students working at home or in dormitories at night and on weekends. An increase in hours beyond traditional reference hours would impose a staffing and resultant cost burden upon most libraries unless traditional reference hours or other services decreased proportionately. It is generally accepted that digital reference service, unlike e-mail reference service, is too complicated to be done at the physical reference desk even during slow periods.

Centralization vs. decentralization: Libraries that have implemented digital reference services have had to wrestle with the question of one general digital reference service for the entire campus versus specialized digital services staffed by experts in subjects or formats. On this issue, cost factors frequently war with subject expertise and campus or library uniqueness. A centralized service may provide for more efficient use of staff time, especially during slow periods, and it has the potential to expand the knowledge base of librarians who normally work only in specific subject areas. The potential to refer in-depth questions to a subject specialist can be an option within a centralized service model. A decentralized service has the potential of assuring that the user receives reference directly from the person(s) most familiar with the subject area. A decentralized service can, however, be more expensive than a centralized one, especially in light of the fact that digital reference services are priced and sold by the “seat” or operator station in use at any time.

Training: The delivery of quality digital reference services requires that training and practice be provided to reference staff who must develop skills in the use of chat technology and in the real-time sharing of Web pages. Most library staff (unlike undergraduates) are not

³ Sloan, Bernie, “Ready for Reference: Academic Libraries Offer Live Web-Based Reference.” July 11, 2001 (<http://www.lis.uiuc.edu/~b-sloan/r4r.final.htm>)

familiar with the protocols and pitfalls of live chat, so it is essential that training be done before staff are expected to provide real-time “live” service. It has been found that brief, concise responses are best, even when it means that more than one brief response in a row is sent to the user. This helps assure that the user waits the minimum amount of time for a response. Planning for digital reference is also required to script frequently used messages, such as greetings, closing instructions, and frequently used URLs, so that these do not need to be repeatedly typed. Scripts help project a uniform style and quality standard. Training procedures and written documentation must also be provided.

Providing answers to user queries vs. teaching users to finding information: The interactivity of digital reference has the potential to enhance the ability to instruct the user in a way that closely mirrors a reference interview at the desk. Digital reference software that facilitates the sharing of Web pages, unlike e-mail, enables reference staff to show the user how to find the information. The software also has the potential for the user to be guided through a step-by-step process to perform part of the search. The potential for interactive reference to promote users’ self-sufficiency is one of its strongest features. Some digital reference systems allow multiple remote users to log onto the same session and receive instruction as a group. This extends the possibility of group training and instruction in circumstances in which it is impractical to assemble a group of students in a classroom.

Distance Learning: Classes taught entirely on the Internet or with only one or two classes held at a physical location have been a growing phenomenon during the last few years, fueling the number of distance learning students. A general rule for distance education is that the originating institution is responsible for providing library assistance for distance learners. The ACRL Guidelines for Distant Learning Library Services (Revised 2000) provide that institutions of higher education must meet the library resources and service needs “of all their faculty, students and academic support staff, wherever these individuals are located, whether on a main campus, off campus, in distance education or extended campus programs, or in the absence of a campus at all, in courses taken for credit or non-credit; in continuing education programs; in courses attended in person or by means of electronic transmission; or any other means of distance education.”⁴ Digital reference offers the means to offer in-depth library instruction and reference service to students enrolled in University distance learning programs.

Evaluation and Assessment: Ongoing evaluation and assessment of digital reference service assures that the goals and objectives of the service are being met. The methods for evaluating digital reference are similar to those of traditional reference but with a different focus. Because gathering statistical data and responses to surveys can be an automated side-feature of digital reference software, the focus is on user satisfaction, the quality of the response, and the perception of the user about the question-answer process that has been established.⁵ Data gathered in surveys, statistical analysis and focus groups can be used to establish hours of

⁴ Association of College and Research Libraries Guidelines for Distant Learning Library Services. Rev. 2000. Chicago: American Library Association, 2001. (<http://www.ala.org/acrl/guides/distlrng.htm>)

⁵ Lankes, R. David and Abby S. Kasowitz. *The AskA Starter Kit: How to Build and Maintain Digital Reference Services*. Syracuse, N.Y.:ERIC Clearinghouse on Information and Technology, 1998.

service, level of staffing, quality of responses, need for training, determination of audience reached, type of questions asked, effectiveness of (or need for) marketing and promotion, etc. Ongoing evaluation and assessment is a critical piece in assuring the success of digital reference service and its future expansion.

Marketing and Promotion: Marketing is a vital component of digital reference. The most important element in marketing it is making it readily available at point of user need. Most digital reference software relies for this on hypertext links to the service in very prominent places on each library's Web site. Another particularly effective mechanism for this purpose is a "persistent browser button" that is present on the user's browser, allowing him/her to ask for help even when using a proprietary database (currently offered by only one digital reference product, but promised by others). Other useful marketing tools include:

- Letters or messages to faculty.
- Incorporation into all library instruction classes.
- Working with faculty responsible for core programs and including information in instructional programs.
- Articles in student newspapers or newsletters.
- E-mail messages targeting a particular group of students, e.g., those living in the dorms.
- Large poster on easel at entrance to library or reference area advertising the service.

Privacy and Confidentiality: The establishment of digital reference service involves questions of privacy, confidentiality, security, and intellectual property rights. Digital reference services usually have a privacy policy linked to the page where the user asks his/her question. Such policies outline how the privacy of the individual and the confidentiality of the questions will be maintained by the service. Digital reference questions in which the user's name is part of the question raise a concern not faced by users at reference desks. Digital reference users need to be assured that their name and question will not be read or seen by others. Libraries can assure the user of confidentiality while still providing needed statistical and survey data as well as questions for training and FAQ's. Many libraries strip off the name of the user as soon as the question is answered and just maintain a file of the questions. Some digital reference systems maintain a history of questions by user e-mail address, and offer users the option to remain anonymous.

Because the Web removes intellectual property from a fixed context such as a printed book or journal and allows endless replication of information, the meaning of intellectual property is changing. Digital reference service may place libraries in the middle of yet undefined disputes between users, publishers, and authors. As Brett Butler has stated, "Libraries planning to offer electronic reference services can expect to face a complex and unclear legal position for the next decade or more."⁶ Thought needs to be given to the intellectual property issues that may be involved when an answer can be further distributed beyond its initial recipient. Robust user

⁶ Butler, Brett, "Designing a Virtual Reference Desk: Intellectual Property Considerations" In Lankes, R. David et al, *Digital Reference Service in the New Millennium: Planning, Management, and Evaluation*. (New York: Neal-Schuman Publishers, Inc., 2000) 91-109.

authentication systems seem to be called for. Butler notes that the future of digital reference service “will be inextricably intertwined with intellectual property issues.”

Part II:

Survey of Technology Issues in Digital Reference Services among ARL Libraries Today

Choice of systems: About thirty ARL member libraries are engaged in some level of digital reference (survey conducted in October 2001 – see **Appendix A: ARL Libraries and Digital Reference Products Used**). Two trends emerge:

- A steadily increasing number of libraries are providing this type of reference service. During the survey, several libraries initiated digital reference or enhanced a basic e-mail or chat service to one with more interactivity and visual content sharing.
- Increased use among ARL libraries of digital reference systems that offer interactive visual content (escorting, co-browsing, and form sharing – see **Appendix C: Glossary**) in addition to chat and e-mail dialog between the librarian and the user. Several libraries signed up for such high-end systems during our survey and/or migrated from chat-only or e-mail systems to these. Examples of the more advanced systems are the e-Gain products offered through LSSI or 24/7, NetAgent, and Convey. The most widely used of these three is marketed and serviced through LSSI.

Use patterns: It was difficult to obtain consistent information on how and how frequently the digital reference services were used. Virtually all libraries consulted reported low volume of traffic. Some attributed this to the novelty of the service, others to insufficient publicity or Web presence. None reported “waiting lines” due to overwhelming success. A few libraries are engaging in collaboration across affiliated libraries in a university setting or consortium or state. Most libraries restrict the service to their primary clientele.

Features of digital reference products: There is a wide range of features available, and no one system currently on the market offers all features desirable for library digital reference. All digital reference systems involving more than chat and e-mail were developed for e-commerce use (e.g., catalog sales over the web, customer service on computer hardware or software). Such applications require a much less varied and complex set of interactions than library digital reference. The latter may incorporate the entire general World Wide Web, many indexing and abstracting databases, complex sites accessing full text of publications and interactive links to library catalogs and other sites, and user authentication tools for restricted use content. Each of the vendors of digital reference products is responding to the library market’s unique and complicated needs in a different way.

A comparison of the features offered by the six major vendors currently used in ARL libraries appears in **Appendix B: Features of Digital Reference Systems Used in ARL Libraries**. We summarize those tables briefly here. (Technical terms used below are explained in **Appendix C: Glossary**).

- Two of the products (Virtual Reference Desk from LSSI and 24/7 Reference) offer software developed by e-Gain and enhanced by additional software from other companies in order to meet some of the complex and interactive needs of library digital reference. 24/7 Reference is the product currently in use at UCLA, Irvine, and Davis and being tested at Berkeley. It offers co-browsing, escorting, chat, form sharing, user authentication, and some other useful features. Both of these vendors view libraries as their primary customers.
- Similar functionality is available from Convey and NetAgent. These systems also offer voice-over IP and video/photo capability. Fewer ARL libraries use these systems. Convey offers a unique publicity possibility: a persistent browser button that appears in the user's upper right corner of the browser at certain predetermined Web sites. NetAgent is reported to handle complex Web sites very well.
- LiveAssistance, LivePerson, and LiveHelper do not currently offer co-browsing, escorting, or form-sharing. LivePerson and LiveHelper offer voice-over IP (as does Convey). LivePerson promises a form of co-browsing in its next software release. They all handle complex sites. None has an automated means of user authentication.

Cost: The figures offered in **Appendix B** may vary from negotiated prices, but they offer a basis for general comparison. All systems are sold by "seat" or operators. All systems can be operated remotely from any workstation with the required downloads and/or platform.

- Low-end systems offering chat, page pushing, and basic logging of transactions and sessions start at \$50 to \$89 per month per seat (\$600 to \$1,068 per year) and cost as much as \$1,800 per year (plus \$1,000 one-time startup cost).
- High-end systems operated off a vendor's remote server are priced at \$2,400, \$3,600, and \$6,000 per year per seat with additional setup fees. High-end systems can also be purchased to run off local server in the library (see table in **Appendix B**).

PART III:

The Status of Digital Reference Service in the UC Libraries Today

At present, several of the UC campuses—UCLA, UCI, UCB, UCD—are testing and/or using contact center software (first Webline, and now e-Gain enhanced by 24/7 Reference) to provide real-time digital reference services. UCSD is presently reviewing the market of relevant software packages to determine which is most relevant to its needs. UCB is also weighing other software packages for digital reference. Those libraries that have moved ahead to provide digital reference services to date have experienced varying degrees of frustration in their use of the software. There is obvious benefit to users through digital reference services, and there is interest across the UC system in experimenting with this innovative service, but there is a dilemma that is hindering progress: the lack of a single, robust, dependable software to deliver digital reference services in the complex UC digital environment. At this time, even the most promising software packages on the market (those listed in **Appendix B**) have shortcomings.

The University of California libraries may be well-positioned to effect change and improvement in this area: through collaborative action, the UC impact on the market could influence the improvement of the most promising packages. If the UC libraries specify enhancement to some of the existing software for digital reference that would make it meet all of the needs of the UC libraries, it is very possible that software developers would meet those specifications.

If there were one software package that “has it all” and it were made accessible to all UC campuses, it would be possible to implement a single digital reference system that could be used by any UC library whenever it wants to turn it on to assist users with access to the entire range of resources available to UC affiliates. The parameters by which any one UC library might develop digital reference services are a matter for local decision-making. However, it is highly desirable that one best software package for digital reference services be selected for the UC libraries so that the software supports collaboration among UC libraries at some future date. If the UC libraries used the same software, it is possible to envision collaboration in reference or in collections across science disciplines, for example, or collaboration in meeting late night or other reference service hours. On the other hand, if the digital reference systems used on the UC campuses use different software, such sharing via the web will be precluded. A unified approach to digital reference could assist in supporting satellite campuses and the newly emerging UC campus library at Merced. The goal should be gradually-evolving collaboration in services, with no mandate for centralization.

Part IV: Recommendations

The Task Force on Digital Reference Services recommends that SOPAG:

1. Move UC efforts on digital reference services from the study phase to the working phase. Ongoing SOPAG-sanctioned structure for sharing of knowledge on this subject by UC libraries staff is essential, particularly in support of the effort to shape software that is sufficiently robust for all UC needs.
2. Appoint a UC Libraries Digital Reference Services Working Group to build on the foundation provided in this White Paper. This group should have representatives from all of the UC libraries.
3. Charge the Working Group on Digital Reference Service to monitor closely the evolution of software relevant to UC needs, toward the goal of identifying an acceptable software package. Its task:

Develop a statement of criteria needed in software to support digital reference services in the UC environment, that is, spell out the minimum and highly desirable features needed in a software package that could be adopted by the UC libraries.

Evaluate any software package studied in terms of its capabilities; its limitations; its potential to interface successfully with, and be supported by, library and/or campus infrastructure; and its requirements for any special resources to support its use.

Recommend a “best” system for UC libraries to adopt as it becomes available.

Serve as a liaison with software vendors to articulate UC needs and negotiate trial arrangements as appropriate to encourage progress in the development of the needed software.

Establish a UC libraries digital reference services listserv to encourage the development of a shared-knowledge base among all interested staff.

Identify the role of CDL in licensing or other issues relevant to software for digital reference services.

Build upon and take into account the investment in and commitment to digital reference services and planning that are already present on some UC campuses.

APPENDIX A: ARL Libraries: Digital Reference Products Used and Operating Hours as of September 2001
(compiled October 2000)

Name of University	Name of Digital Reference Product/Vendor	Misc. (Hours, etc.)
Auburn University Libraries. E-Gateway. InfoChat	HumanClick, but expects to switch to Convey	M-Th 8am-10pm, F 9am-5pm, Sa 9am-5pm, Su 1pm-10pm. These times correspond to when there are two reference librarians on duty.
Bowling Green State University, Ohio: http://www.bgsu.edu/colleges/library/infosrv/hc.html	Started with Human Click, then moved to LSSI in February, 2001 Profiled in this paper: http://www.infotoday.com/cilmag/apr01/broughton.htm .	Su-Th 9am-10pm, F 9am-5pm, Sa 1pm-5pm
Cornell University. Olin Kroch Uris Libraries. Reference Services Division. Ask a Librarian	They still have an active subscription to LivePerson, but they just switched to 24/7 beginning September 2001.	M-F 9am-5pm. Has a note that this is an "experimental service"
Duke University Libraries. William R. Perkins Library. Reference Services. Live On Line Reference	LSSI	M-F 1pm-5pm
Georgia Institute of Technology. Library and Information Center. Reference Department. Real Time Reference	AOL Instant Messenger(sm) (America Online)	
Illinois State University: http://www.mlb.ilstu.edu/service/ask.htm	Ready for Reference is a collaborative 24/7 live reference service being piloted by eight academic libraries in the Alliance Library System in Illinois. The smaller colleges are listed on http://www.lis.uiuc.edu/~b-sloan/r4r.final.htm	Round-the-clock reference service. Each library expected to staff service for a minimum of 8 hours/week. Time slots not covered by libraries were covered by LSSI backup reference personnel.
Indiana University-Purdue University Indianapolis Library. Real Time Reference Help	LSSI e-Gain.	Access controlled by proxy server, not LSSI.

Name of University	Name of Digital Reference Product/Vendor	Misc. (Hours, etc.)
Massachusetts Institute of Technology. MIT Libraries. Ask Us!-LIVE	Live chat only.	M-Th 3pm-6pm, F 3pm-5pm. Has links to FAQ's and Subject Guides.
North Carolina State University Libraries. Ask a Librarian LIVE	LSSI eGain. Contact: Josh Boyer, josh_boyer@ncsu.edu , 919-513-3655.	M-Th 8am-9pm, F 8am-5pm, Sa 9am-5pm, Su 9am-9pm.
Northwestern University. Reference Assistance - LiveHelper	I e-mailed because Convey says they're using Convey	M-Th 3pm-9pm, and F 3pm-5pm. Notes this "service is in experimental stages."
Southern Illinois University at Carbondale. Morris Library. Online Help/Online Reference	An instant messaging system developed by Keith VanCleave, a programmer at the library.	Started this summer; staffed by volunteers; M-F 1pm-4pm; added Monday 6pm-9pm; trying to get a grant for more staff hrs.; intend to answer basic ref questions, using email, face to face for more complicated questions; uses canned responses.
Temple University Libraries. Online Reference. Temple TalkNow	Good informative web page explaining the history of TalkNow. Camden is the source code that is provided free of service by Temple. Requires MySQL as a database backend. Persistent chat (no time limit, persistent chat window to track what's been said previously).	Open during normal reference desk hours. Launched in Nov. 1998, live in Dec. 1999
University of Maryland University College. Information and Library Services. Getting Help. Chat with a Librarian	LiveAssistance	
University at Buffalo, The State University of New York. The Libraries. Help Documentation. Express Links. Instant Message	They call the service "Instant Librarian" so AOL IM could be right. Emailed Jill M. Hackenberg at jmh7@acsu.buffalo.edu .	
University of California- Los Angeles (UCLA). Library + Arts. UCLA Library. College Library. Live Chat / Online Librarian	24/7	M-Th 2pm-4pm and 6pm-8pm

Name of University	Name of Digital Reference Product/Vendor	Misc. (Hours, etc.)
University of California-Irvine Library: http://www.lib.uci.edu/pilot/#exp	24/7 pilot	
University of Chicago Library. Business and Economics Resource Center. Ask-a-Librarian Live	LiveAssistance Web page describing service: http://www.lib.uchicago.edu/e/busecon/aboutask.html . (offers lots of info including sample transcripts)	The total time providing reference services has now almost doubled for each of the 3 librarians (from 13 to 20 hrs per week.) Keep only 2 operator windows open at a time. Have canned scripts. Staffed by 3 lib and 1 clerk from office, not ref. Avail 1-5 by BEREC and 5-7 with staff from other libraries.
University of Florida. George A. Smathers Libraries. RefeXpress	eShare NetAgent(tm). Plan on talking to Jana Ronan about its features. Only library customer?	
University of Illinois at Chicago. University Library. Library of Health Sciences, Peoria. Questions?	HumanClick	Service available M-F 8am-5pm.
University of Illinois at Urbana-Champaign. Library Gateway. Ask A Librarian (real time or e-mail). Real-Time Help	HumanClick	M-Th 9am-7pm; F 9am-6pm, Sa 1pm-5pm, Sun 1pm-5pm. Have FAQ.
University of Maryland Libraries. Engineering and Physical Sciences Library. Chat with a Librarian	HumanClick	M-Th 12pm-6pm; F 12pm-4pm. "Pilot Project."
University of Massachusetts, Amherst	Examining chat reference service, possibly using LivePerson software. (SOURCE: livereference listserv, Isabel Espinal, Outreach Specialist/Reference Librarian, W.E.B. Du Bois Library, phone: 413-545-6817, iespinal@library.umass.edu)	Currently offering chat only. M-F 1pm-3pm.
University of Michigan Business School. Kresge Business Administration Library. Ask Us. Contact Kresge Library. Kresge Virtual Reference	LiveAssistance	M-F 2pm-6pm.
University of Nevada, Reno. Reference Chat	HumanClick	Fall semester 2001 hours MTW 2pm-4pm; T 3pm-

Name of University	Name of Digital Reference Product/Vendor	Misc. (Hours, etc.)
http://devweb.library.unr.edu/depts/reference/askalibrarian.html		5pm, 7pm-9pm
University of North Texas Libraries: http://www.library.unt.edu/chatroom/default.htm	WebMaster ConferenceRoom Professional Edition	M-F 10am-5pm http://www.conferenceroom.com/products/professional.shtml http://www.conferenceroom.com/home.shtml
University of Pennsylvania Library. Lippincott Library of the Wharton School. Ask a Question!. Live Reference	LivePerson Offers something misleading called "Instant Answers 24/7" which is actually a searchable FAQ database.	M-Th 3pm-8:45pm; F 1pm-5pm
University of Pennsylvania Library. Van Pelt Library. Live Online Reference / Online Librarian	LiveAssistance	Su-W 9pm-2am. Pilot program.
University of Winnipeg: http://cybrary.uwinnipeg.ca/help/live-help.cfm	Human Click	Open during library hours: M-F 8am-10:45pm, Sa-Su 11am-5:45pm. Pilot project.
University of Wisconsin - Madison. Kurt F. Wendt Library. AskWendt Live	Convey	M-W 5pm-7:30pm (Summer)
Virginia Polytechnic Institute and State University. Virginia Tech University Libraries. Online Reference. LiveRef	LivePerson Corrected web address: http://www.lib.vt.edu/services/liveref.html	M-W 1pm-7pm; Th-F 1pm-5pm

Appendix B: Features of Digital Reference Systems Used In ARL Libraries

Section I: Systems offering advanced features

(compiled October 2001)

FEATURES	Convey	Virtual Reference Desk e-Gain enhanced by LSSI	24/7 Reference e-Gain enhanced by MCLS	eShare NetAgent
Type – Basic characteristics				
• Chat	Yes	Yes	Yes	Detailed information not available. Reported by one ARL library as more stable and versatile than e-Gain products.
• Page pushing (cut & paste)	Yes	Yes	Yes	
• Page sharing	Yes	Yes	Yes	
• Co-Browsing & Escorting	Yes	Yes	Yes	
• Form sharing	Yes	Yes	Yes	
• Voice over IP	Yes	No	No	
• Video/photo capability	Yes (both)	No	No	
• Conferences, classrooms	Yes, in coming release.	Meeting with up to 20. Displays PowerPoint and other materials.	Meeting with up to 20. Displays PowerPoint and other materials.	
• Other		Crashes in “difficult pages.” Interact may help.	Crashes in “difficult pages.” Interact helps some pages.	
Convenience				
• Ease of use – librarian	Relatively easy	Relatively difficult	Relatively difficult	Not available. Reported comparable to e-Gain products. Few library customers.
• Ease of use – patron	Easy, after required download	Relatively easy	Relatively easy	
• Requires user plug-in or download	Yes (easiest in IE)	ActiveX plugin	ActiveX plugin	
• Transcript of session to user	Kept; sendable Not automatically sent	Yes, automatic with URLs	Yes, automatic with URLs	
• Advertising service to user	Persistent browser button by URL – also links, logo	Links, logo	Links, logo	
• User authentication	By librarian or password. Can share w/o authentication.	By librarian, password, or proxy	By librarian. By proxy server promised.	
• Integration with local proxy server	Various possibilities	Yes, thru LiveProxy	Various possibilities.	
Management information				
• Statistics	Admin level	Admin level	Admin level	Yes.
• Logging	Yes	Yes	Yes – privacy possibilities	Yes.
• Traffic control/routing	One-to-one. IP grouping possible.	One-to-one; multiple clients per seat possible. IP grouping possible.	One-to-one; multiple clients per seat possible. IP grouping possible.	One-to-one or multiple clients.
Adaptability/Flexibility				
• Browser/platform restrictions	PC (W'98 or higher) with IE, o.k. in Netscape Mac patron version promised	PC with IE or Netscape (PC for librarian; PC or Mac for patron)	PC with IE best; o.k. in Netscape (PC for librarian; PC or Mac for patron).	
• ASP or local server	Either available	Either available	Either available	
• Ability/willingness to adapt	Seem eager to adapt to lib needs	Seem eager – many lib. customers	Seem eager to adapt to lib needs	
Cost				
	ASP for \$200 per seat. License for local server: \$2000 per seat + \$5000 one-time for FCM component + 15% annual maintenance fee.	Varies. Expensive. E.g., \$6000 per seat + \$6000 set up fee. Purchase software \$15,000	Varies. For Live + Interact: \$3600 per seat per year + \$4,000 one-time. Local server \$3500 + \$350/year server certificate.	Relatively expensive. Detail not available.

Appendix B: Features of Digital Reference Systems Used In ARL Libraries

Section II: Systems offering less advanced features (Compiled October 2001)

FEATURES	LiveAssistance	LivePerson HumanClick*	LiveHelper	Anexa.com, Camden AOL Instant Messenger
Type – Basic characteristics				
• Chat	Yes	Yes	Yes	Yes
• Page pushing (cut & paste)	Yes	Yes	Yes in Pro & Corp	Yes
• Escorting	No	No	No	No
• Co-Browsing	No	Forthcoming	No	No
• Form sharing	No	No	No	No
• Voice over IP	No	Yes	Yes in Corp or \$100/mo	No
• Video/photo capability	No	No	No	No
• Other	Handles difficult sites. Knowledge Base for FAQ.	Handles difficult sites. FAQ always available		
Convenience				
• Ease of use - librarian	Easy.	Easy.	Easy.	Chat solutions used by few large libraries. Easy to use. Low-tech solutions. Not covered in this report.
• Ease of use - patron	Easy.	Easy.	Easy.	
• Requires user plug-in/download	No.	No.	No.	
• Transcript of session to user	At librarian's discretion, yes.	Yes.	No. Patron could print chat.	
• Advertising service to user	Links, logo	Links, logo.	Links, logo.	
• User authentication	By librarian	By librarian	By librarian	
• Integration with local proxy server	No. Can push any page regardless of authentication.	No. Can push any page regardless of authentication.	No. Can push any page regardless of authentication.	
Management information				
• Statistics	Various. Easy to generate.	Yes, linked to transcripts.	Yes in Pro & Corp	
• Logging	Yes	Yes	Yes in Pro & Corp	
• Traffic control/routing	Up to four sessions per seat.	Multiple sessions possible.	One-to-one chat only.	
Adaptability/Flexibility				
• Browser/platform restrictions	None.	None.	None.	
• ASP or local server	ASP	ASP	ASP	
• Ability/willingness to adapt	Colors, logos, and some wording can be customized. Seem eager to adapt within these possibilities.	Customize logo and links.	Customize logo and links.	
Cost				
	One-time set up fee \$500. One-time customization fee: \$500 \$150 per month per seat.	Corporate: \$350 per seat per month. Pro: \$89 per seat per month. 10% discount on annual contract.	Pro: \$50 per seat per month. Additional features sold unbundled. Maximum package (Corp) \$250 per month per seat.	

*HumanClick is owned by LivePerson and not accepting new customers.

APPENDIX C: Glossary

NOTE: In APPENDIX B: Features of Software Used in Digital Reference Services, the terms "escorting" and "co-browsing" are merged as they are below, and there is a separate line for "page sharing." These distinctions are subtle; vendors use the terms in different ways.

ASP	Application Service Provider. The software runs totally on a computer run and managed by the vendor of the application, alleviating the need to install anything locally within the library. Many vendors offer ASP and packages where they will sell or lease the software and/or hardware to be installed on a server within the library.
Chat	Ability for librarian and patrons to "converse" by typing and receiving messages in real-time, synchronous mode. All systems surveyed by the committee accept chat as a minimal level of communication. Chat is a step above e-mail for reference because it is synchronous, and a departure from phone reference because it allows users with a dial-up connection to "talk" to a librarian when their phone line is tied up for the Internet. Most chat interfaces allow <u>Page pushing</u> .
Co-browsing or Escorting	Means for the librarian and the patron to navigate the web together from remote locations. When the librarian goes to a page, it appears in the patron's window. If either clicks on a link or enters a URL, the other's browser sees the page retrieved. Can be a useful teaching medium. (A step above <u>Page sharing</u> .)
Conference or Classroom feature	The ability to chat, view documents, and utilize the other features of a digital reference system with a group of users in remote locations simultaneously. Some allow PowerPoint, video, chat, voice over IP from a single <u>seat</u> .
Difficult pages	Pages with frames, with sessions within other sessions (often using frames), accessing other systems within one system. These tend to cause problems for some digital reference software, and may cause the browser to crash, the session to abort, the system to freeze, the user/library connection to be lost, and similar error conditions.
Escorting Form sharing	See Co-browsing Librarian (or patron) types in a form box, and the other sees the typed characters. If either modifies the characters in the box, the other sees it. The results pages also appear in both browsers.
IP grouping	The ability to authorize certain computers to use the service based on their IP addresses.
Page pushing (or Web pushing)	The simplest of the web-sharing applications. One types in (or pastes) a URL and clicks a button to cause the web page to appear in the patron's browser window. Can be surprising and perceived as disruptive when the page suddenly pops up, replacing whatever was there. Some systems force a new window to open for every pushed page. It can be awkward to cut and paste or type URLs. The received page is "live" (on the web, the links and search forms work), but the sender cannot do <u>Form sharing</u> , <u>Escorting</u> , or <u>Co-browsing</u> .

Page sharing	Allows the librarian to 'lead' a patron around the web. It is one-sided, in the sense that the librarian clicks on sites or specifies the URLs, and the patron sees what the librarian does. In some systems, the control can be passed to the patron. (A step above <u>Page pushing</u> .)
Seat	A unit in which most digital reference services are sold. A "seat" is the ability to lead one or more digital reference sessions. In most systems, the seat = one library reference staff person at any time using the system. An unlimited number of people can share the same seat from any number of locations as long as there is only one person using it at a time.
User authentication	The ability for chat reference systems to identify authorized users for use of the service, for use of licensed databases, or for other levels of the service. The least automated means is for the initial chat or login to require a valid ID or other means of manual or automated authentication. Some vendors offer (or promise) authentication by IP addresses, student ID, proxy servers, and other means.
Video/photo capability	Ability to broadcast live video. Requires a camera and other hardware to support it.
Voice over IP	Allows users to talk through their internet connection. Requires microphones, sound cards, speakers, and other hardware on both machines. Works best with high-speed connections on both sides.

APPENDIX D: Resources for More Information on Digital Reference Service

Listservs and Discussion Groups:	
DIG_REF@LISTSERV.SYR.EDU	Listserv of digital reference services
LIBREF_L@LISTSERV.KENT.EDU	Discussion of library reference issues
LIS_LINK@MAILBASE.AC.UK	Computer-based information and reference services in libraries
MARS_L@ALA.ORG	Machine-Assisted Reference Section of Reference and User Services Association of ALA
WEB4LIB@SUNSITE.BERKELEY.EDU	Library-based World Wide Web systems

Conferences on Digital Reference:

The Virtual Reference Desk Project (VRD) organizes and provides annual conferences on digital reference issues for information professionals in libraries and other contexts. See [<http://www.vrd.org/conf-train.shtml>] for more information.

American Library Association: Annual and midwinter conferences have provided a wealth of information on digital reference, including programs, poster sessions and vendor demonstrations of products. In addition, many of the ALA Divisions (LITA, ACRL, etc.) hold annual conferences, which also include programs on digital reference services.

EDUCAUSE Annual Conference: EDUCAUSE is a non-profit association whose mission it is to advance higher education by promoting the intelligent use of information technology.

Indexes and Journal Resources on Digital Reference Services:

Library Literature [online], 1984-present. Indexes journal articles in library and information science.

Library & Information Science Abstracts [online], 1969 to present. Indexes journal articles in specific applications of information technology.

Reference and User Services Quarterly. Chicago: American Library Association.

Information Technology and Libraries, Chicago: Library and Information Technology Association.

Journal of Academic Librarianship, Ann Arbor, MI, etc.: Mountainside Pub.

D-Lib Magazine, Reston, VA: Corporation for National Research Initiatives.

Reference Services Review, Ann Arbor, MI: Pierian Press.

APPENDIX E: Charge to the SOPAG Task Force on Digital Reference Service

Date: 04/18/01

Subject: SOPAG Task Force on Digital Reference

To:

Eleanor Mitchell, Chair

Joe Barker, UCB

Christy Caldwell, UCSC

Jackie Hanson, UCSD

Judy Horn, UCI

Peggy Tahir, UCSF

Lizbeth Langston, UCR

Trisha Cruse, CDL

Susan Lessick, SOPAG Liaison

From: Phyllis Mirsky, Chair, SOPAG

cc: SOPAG

Let me begin by thanking all of you for your willingness to serve on this Task Force and most especially, Eleanor for taking on the responsibilities of Chair. The membership is listed above and the charge below. One of your first steps will be to review the charge to make sure you understand what is expected of you. Susan Lessick, SOPAG member from UCI, is your liaison to SOPAG and was instrumental in the development of the charge. She can give you guidance and background as needed.

As you might imagine, there was a great deal of interest from throughout the system and we had to make some difficult choices. One of the first things you'll notice is that this is not a "representative" group, i.e., there is not one person from each campus. As a result, in your deliberations, you will need to be sure that you are communicating as appropriate throughout the system.

I'll turn it over to Eleanor now to manage how/when you might want to meet, etc. If you have any questions, Susan will probably be able to assist you. If not, she'll confer with SOPAG...

Best wishes for a successful venture!

Phyllis S. Mirsky

Task Force on Digital Reference Service

BACKGROUND: With the advent of the Internet and the proliferation of online resources, the boundaries of a library's collection have expanded tremendously and information seekers require more guidance than ever. To address this need, several UCs and a growing number of libraries in the country have launched or are exploring digital reference services, as the Internet affords the ability to conduct entire reference transactions via the Web, from specifying users' needs to delivering information from the collection. Moreover, it is now possible to develop innovative reference delivery methods by using new Web tools and products such as synchronous dialogue and two-way application sharing. Integrating reference service and new technology offers opportunities and possibilities to enhance the reference process and collaboration.

Digital reference service, however, introduces new issues and service challenges, including audiences served, technology used, resources and skills required, and policies necessary. Another key issue in conducting digital reference service is scalability: how can a digital reference service grow to handle a large number of questions given existing resources? As we attempt to forge next-generation service models for the digital environment, we need to have a better understanding of the theoretical and pragmatic facets of digital reference service in order to concentrate our efforts to design services to best meet the rapidly evolving information needs of remote users.

To better understand the benefits and implications of digital reference service, SOPAG is appointing this Task Force to develop a white paper on digital reference service to provide guidance to UC libraries as they rethink how to best create and perform new models of reference in the future.

CHARGE: The charge to the Task Force includes:

- 1) Assess the role of digital reference service in academic library settings and examine key issues. Key issues might include: the future of traditional, face-to-face reference service; costs and technology needed to support digital reference services; scalability of digital reference services; training of personnel; and relationship between providing answers to user queries and instructing users on how to find information independently.
- 2) Investigate what other libraries are doing regarding digital reference service and to resolve cost, technology, staffing and training issues.
- 3) Suggest methods to gather and share user feedback on UC digital reference projects to shape the development and refinement of new digital reference models.
- 4) Suggest ways UCs might collaborate in building and sustaining these services. These might include: sharing experience and knowledge about Web tools; dividing up development work (sharing the development of scripts for responses, specialized bookmarks and resources); sharing the workload for maintaining digital reference services among the UC participants; and building a question/answer database to identify extant and emerging user needs that would inform the development of reference and educational programs and the usability of interfaces and resources.

TIME FRAME: 6 months