University of California SOPAG Digital Reference Common Interest Group
Inventory of Features of Digital Reference Systems (rev. 3/21/03)

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Note: The term "agent" is used to refer to the operator (a library staff member receiving and answering questions). The term "client" is used for the questioner. This overview is indebted to "Appendix 1: Software Feature Checklist" (http://alaeditions.virtualreference.net/) a draft of what will be published as an appendix in *Going Live: Starting and Running a Virtual Reference Service* by Steve Coffman (ALA Editions, forthcoming May 2003).

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1. Engaging the Client (how service is made accessible to clients)	UC Priority	Comments:

Access/Promotion
   ❑   Link or icon in web pages (session established by clicking a URL)
   ❑   Button in browser
       ❑   Download required? Y / N
   ❑   Icon on desktop
       ❑   Download required? Y / N
   ❑   Proactive link automatically suggesting help under preset conditions
       ❑   Download required? Y / N
	Required. Client must not be required to download something to access the service.	

Customization of what Client sees before starting:
   ❑   Ability to customize look
   ❑   Ability to customize location where link, button, icon, etc. appears
   ❑
	Required	

❑ Ability to specify sites or applications (e.g., by URL) which trigger button, link, or icon appearing, offering help	Desirable	

2. Client identification, pre-session (who are you? client type, etc.)	UC Priority	Comments:

Initial self-introduction
❑   Form where client enters name, ID #, status, question, etc.
      ❑   Customizable
      ❑   Built into software (or must be programmed by library)
❑   Client registers and then uses login/password (cf. Amazon or NYTimes)
❑   Certificate or cookie for future logins
	Required in some way	

Verification of client introduction information ❑ Manual authentication by agent ❑ Automated check against database of authorized users ❑ Compatible with existing client databases on each campus	Require means to authenticate patron	

Proxy server integration/interaction (see TABLE 6 - more discussion)
❑   Works with campus proxy server
      ❑   Local server
      ❑   EZ-Proxy
      ❑
	Require works with all campus/library proxy servers.	

3. Client requirements (what clients are required to do to use the service)	UC Priority	Comments:
Operating systems compatibility ❑ PC ❑ Mac ❑ Special workarounds required, or diminished features?	Required: PC & at least some way to provide service to Mac clients	
Browser compatibility ❑ Any browser, any version ❑ Limited to:	Require what clients are likely to have available	
Configuration required ❑ Nothing difficult for basic chat (to start with, maybe walk client through other setting needs) ❑ Browser settings ❑ Computer settings ❑ Other:	Require chat without difficulty, and other changes must be easy to achieve.	
Connection required of client (speed) ❑ Works with dial-up at 28K or slower ❑ Requires DSL, Cable, or faster ❑ Workaround for slow connections?	Require works if slow (dial-up) connection; not limited to hiigh-speed.	
Downloads ❑ Proprietary (button or other software) ❑ Web utility (RealAudio, Flash, QuikTime) ❑ Instant Messenger ❑	Other than a "standard" plug-in, client download must not be required to access the service.	
Hardware add-ons required of client ❑ Sound card ❑ Speakers ❑ Microphone ❑ Camera	These add-ons must not be required of client to use basic service.	
Firewall or network limitations ❑ Works thru campus department firewalls or networks - required ❑ Works thru personal firewall programs (e.g. ZoneAlarm) - not required	Must work with all units on campuses	
Compatibility with screen readers or other adaptive software (ADA)	Required insofar as ADA mandates	

4. Communication media between agent & client (how interact)	UC Priority	Comments:
❑ Chat or other typed messaging ❑ Ease of use *Detailed features in TABLE 11, Agent interface*	Chat required	

❑ Voice over IP
  ❑ Simplex (one person talks at a time, like a CB radio)
  ❑ Duplex (both can talk, like a phone)
  ❑ Computer configuration and bandwidth requirements
  ❑ Easy installation and use for client
	Highly Desirable (must also work without hardware this requires)	

❑ Streaming audio (one way, perhaps for classes)
  ❑ Computer configuration and bandwidth requirements
  ❑ Ease of installation and use for client
	Desirable	

❑ Video
  ❑ Computer configuration and bandwidth requirements
  ❑ Ease of installation and use
	Desirable	

❑ Follow-up when service not active
  ❑ E-mail option
  ❑ Integration of e-mail with other reference services
	Required	

5. Co-browsing possibilities (agent and client can see the same content)	UC Priority	Comments:

❑ Co-browsing I: Escorting*
❑ 1-way only
❑ 2-way
❑ Agent able to choose who leads
❑ Ability to turn off/on client's ability to lead
❑ Background searching without escorting, while keeping escort alive
Required of client:
   ❑ Download
   ❑ Browser requirements
   ❑ Operating system or platform
Connection/speed required for client _____
   Workarounds for slow connection:
	Co-browsing required in some form	

❑ Co-browsing II: Application Sharing**
❑ 1-way only
❑ 2-way
❑ Ability to turn off/on client's ability to lead
❑ What can/cannot be shared (programs, files, drives)?
❑ Security provisions
❑ Required of client:
   ❑ Download
   ❑ Browser requirements
   ❑ Operating system or platform
Connection/speed required for client _____
   Workarounds for slow connection:		

❑ Co-browsing III: Other co-browsing means Describe: Differences from Escorting or Application Sharing: Advantages/Disadvantages over Escorting or Appl. Sharing		

*Escorting: A form of co-browsing in which web-pages retrieved by agent are seen remotely by client (e.g., e-Gain 24/7 or LSSI). Can be reciprocal or 1-way. Can entail varying levels of interactivity (remote cursor control, scroll control, forms sharing, etc. - SEE TABLE 7 for checklist of these options).
**Application Sharing: A data or video-conferencing capability, adapted for some co-browsing systems. It lets two or more users interactively work on the same application at the same time. The application is loaded and running in only one machine; however, keystrokes are transmitted from and screen changes are transmitted to the other participants. Application sharing provides the same capability as remote control software.

6. **Means of authenticating clients in restricted-use sites** (control of access to restricted/licensed databases and sites)	UC Priority	Comments:

❑   Login & password
    ❑   Integrate with library or campus logins
    ❑   Proprietary
❑   IP Authentication
    ❑   Uses special software or remote server (e.g., Easy Proxy)
    ❑   Can be integrated with library or campus existing proxy server
        ❑   Integrated with library's client database for authentication
        ❑   Requires local server
Reliability of authentication means:
    Databases that cannot be co-browsed:
 	
    Workarounds when co-browsing does not work:
 	
        Means of communicating access or denial to client and agent
	Require some means to ensure ineligible clients cannot access restricted sites (without override, below).	

❑ Ability of agent to override: can agent take client anywhere at agent's discretion without client entering password?	Required for the duration of the session.	
❑ Supports both local server and remote proxy authentication (e.g., Easy Proxy)	Required	

7. **Content sharing tools** (features available within co-browsing for interaction to explore, send, explain, share, teach during a session)	UC Priority	Comments:
❑ Co-browsing in some form (see TABLE 5 for details)	Required	
❑ Application sharing beyond web pages (see TABLE 5 for details)	Desirable for training beyond web and browsers	
❑ Screenshots (image, no active links) Required of client: 　❑ Download 　❑ Browser limitations 　❑ Operating system or platform limitation ❑ Automated screenshots (images sent automatically to client) Required of client: 　❑ Download 　❑ Browser limitations 　❑ Operating system or platform limitation	Required in addition to some form of co-browsing	
❑ Page pushing (sends live page to client, not flat image as in screenshot) 　❑ Opens in separate window or same browser window 　❑ Links work 　❑ Forms work Required of client: 　❑ Download 　❑ Browser limitations 　❑ Operating system or platform	Required in addition to some form of co-browsing	
❑ File sharing (send image, Word, pdf, or other files) Types of files sharable: Files that open in client's browser: Files that require other application(s) on client machine Required of client: 　❑ Download 　❑ Browser limitations 　❑ Operating system or platform	Desirable	

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7. **Content sharing tools** (features available within co-browsing for interaction to explore, send, explain, share, teach during a session)	UC Priority	Comments:

Form sharing (what agent types, client sees; or either can share)
❑ 1-way
❑ 2-way
❑ Special key required to make form content visible
Required of client:
  ❑ Download
  ❑ Browser limitations
  ❑ Operating system or platform
	Required	

Interacting with client's screen
❑ Co-scrolling   ❑ 1-way only   ❑ 2-way
❑ Ability to see each other's cursor   ❑ 1-way only   ❑ 2-way
❑ Ability to highlight text on screen   ❑ 1-way only   ❑ 2-way
❑ Drawing on client's screen
Required of client:
  ❑ Download
  ❑ Browser limitations
  ❑ Operating system or platform
	Highly desirable	

White board shared
  Hardware requirements for agent:
 	
Required of client:
  ❑ Download
  ❑ Browser limitations
  ❑ Operating system or platform
	Desirable	

8. Group sessions/Training/Meetings	UC Priority	Comments:

Slide shows/Presentation
    Range of slide show software supported (PowerPoint, etc.)
 	
❑ Script or text or chat with slides
❑ Automatic display (agent need not lead)
❑ Slide show animation works
❑ Slide show sound sent
    Number of client sessions supported simultaneously _____
    Number of agents able to participate as trainers at once _____
Required of clients:
❑ Download
❑ Browser limitations
❑ Operating system or platform
	Highly desirable for group training to remote clients	

Online Meetings
    Maximum number of clients participating _____
    Maximum number of agents allowed _____
    Any reference software features not available:
 	
❑ Meetings archivable
❑ Can incorporate PowerPoint or other presentations
Meeting management features
❑ Block client's chat
❑ Client questions ("raising hands")
❑ Ability to remove individual clients from meeting
Required of clients:
❑ Download
❑ Browser limitations
❑ Operating system or platform
	Required for group training to remote clients	

9. **Interconnectivity among agents during sessions** (multiple clients, multiple sessions, transferring clients, etc.)	UC Priority	Comments:
❑ Ability to engage & transfer multiple clients at one time	All required	
❑ Ability to handle multiple agent sessions at one time		
❑ Back channel communication between agents		
Compatibility for transferring among other brands of digital reference service	Desirable	

10. **Queuing and routing structure** (handling incoming clients)	UC Priority	Comments:
Queue management ❑ Multiple queues within system, campuses, and libraries ❑ Ability to customize look client sees for each queue ❑ Agents can monitor multiple queues ❑ Agents can choose which queue(s) to monitor	All required	
Automatic call routing methods ❑ Not automatic (agent checks selected queues) ❑ Next available agent ❑ Load balancing (priority to less busy) ❑ Skills based ❑ Other:	Require routing appropriate to many varied operations	
Conference and transfer ❑ Can transfer clients between agents ❑ Can transfer clients between service points ❑ Group response ❑ Warm transfer (transcript up to transfer to recipient of transfer)	Transfer ability required	
Message to client if busy or unavailable ❑ If all agents busy ❑ If system unavailable ❑ Customizable?	Appropriate messages required	

11. **Agent's interface** (what agent sees and has to make work)	UC Priority	Comments:
❑ Ability to work with multiple clients ❑ How many? ❑ Ease of use	All Required	

❑ Bookmarks for frequent URLs
    ❑ Multi-leveled (system/campus/service point/personal)
    ❑ Ease of organization into categories
    ❑ Ease of modification
    ❑ Ease of use
	All required	

❑ Alerts
    ❑ Visual
    ❑ Audible
    ❑ Remote alert (when away from service point)
    ❑ Choices and ability to change options
	Highly desirable	

❑ Client connection live or disconnected indicator	Required	

❑ Other client activity indicators
    ❑ Quality of connection indicator
    ❑ Whether client typing or browsing
	Highly desirable	

Layout & design
    ❑ Easy to use (in general, as compared to other dig ref systems)
 	
    ❑ Easy to browse web (screen/frames/windows large enough)
    ❑ Foreign language interface
    ❑ Handle foreign characters (non-Romanized keys)
    ❑ Customizable names of elements in interface
	Highly desirable	

❑ Chat
Features in chat:
    ❑ Scripts:
        ❑ Multi-leveled (system/campus/service point/personal)
        ❑ Ease of modification
        ❑ Ease of use
    ❑ Spell checking
Emoticons
	All required except:
	Spell checking desirable;
	Emoticons optional	

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11. Agent's interface, cont'd	UC Priority	Comments:

Hardware requirements
     Monitor size:
     ❑ Sound   ❑ Camera   ❑ Microphone
	N/A	

Operating system requirements
     ❑ PC only
     Minimum level of Windows _____
     ❑ PC or Mac
     Minimum level of Mac OS _____
	Both highly desirable	

Browser requirements
     ❑ Netscape, version _____, or higher
     ❑ IE only, version _____ , or higher
     ❑ Not browser limited
	Require agents to be able to work from various stations	

Connection speed requirements		
Firewall or network limitations		
Compatibility with Adaptive Software & Devices (ADA)		

12. Session transcripts (record of chat sessions and content shared)	UC Priority	Comments:
❑ Verbatim transcripts ❑ Live links in transcripts	Highly desirable	

❑   E-mailing of transcripts
     ❑   Automatic to client
     ❑   Client chooses yes or no
     ❑   Customizable e-mail message with transcript
	Highly desirable	

Access and organization ❑ by patron ID ❑ by session # ❑ other	Must be serviceable and support client privacy	

Security
     Data ownership (by whom) _____
     Control over data (retention, sharing, etc.):
	Require high degree of security and client privacy	

13. **Client profiling** (data collected on patrons)	UC Priority	Comments:
Data collected on clients: ❑ Ability to customize what is stored	Highly desirable	
❑ Privacy protection ❑ Client able to opt out ❑ Default anonymity (must opt in) ❑ Profiling may be disabled	Adequate privacy protection required	
Data protection mechanisms: Data owner _____ ❑ Control over data by library ❑ Adequate data security measures	Require adequate client privacy and access to data for administrative purposes	

14. **Satisfaction surveys**	UC Priority	Comments:
❑ Automatic survey available ❑ Content customizable ❑ Optional to client ❑ Sent to agent ❑ Linked to session transcript ❑ Anonymous	Highly desirable	
❑ Reporting and analysis tools provided ❑ Suitable to library reference needs	Required	

15. **Administration** (ability to change, manage, customize, generate reports as needed, etc.)	UC Priority	Comments:
What does local administration of system allow:		
❑ Modify/customize survey forms	Required	
❑ Modify content of scripts, bookmarks, other shared content	Required	
❑ Generate statistical reports	Highly desirable	
❑ Modify system configuration and look	Highly desirable	

❑ Two- (or more) tiered administration available (systemwide, campus, service point configuration abilities)
  ❑ Features supported at each level:
 	
  ❑ Shared library/campus profiles
  ❑ Shared library/campus policies and/or procedures
	Required for UC consortium	

16. **System licensed or hosted (ASP)** (similar to: buy or lease)	UC Priority	Comments:

❑ Hosted (software resides on server run by vendor)
Security:
  ❑ Who owns data (e.g., patron profiles, transcripts)
System reliability:
  ❑ Downtime, redundancy
  ❑ Guarantees of vendor performance
 	
Location of servers
  ❑ Speed of traffic
	Preferred	

❑ Licensed (purchase software operate locally)	Not desirable	

17. **Customization** (see also individual sections)	UC Priority	Comments:

What CANNOT be customized:
 	
❑ Customization adequate to address each campus's needs
  ❑ Customization adequate to address many service points within a campus
  ❑ Additional licenses or seats required to customize
	Require ability to customize extensively	

18. Agent training, support, and documentation	UC Priority	Comments:

Training offered
    1.   Software use
    2.   Virtual reference practice & skills
    3.   Training with each software upgrade
	1 & 2 required.
	3 desirable if upgrade major.	

Training levels:
    1.   for local trainers (who must create documentation and train others)
    2.   for all staff involved
    3.   for administrators
	1 & 3 required.
	2 desirable.	

Training approach
    1.   On-site
    2.   Live online
    Other:
	1 required.
	2 desirable.	

❑ Documentation provided:	Adequate documentation and updates required	
❑ System support Hours available:	Adequate support required	

19. Standards Support (as opposed to proprietary & incompatible with other and future systems)	UC Priority	Comments:
❑ Plans to adapt to new technologies for communication	Required	
❑ Between other digital reference systems	Highly desirable	

20. Pricing and costs	Comments:
Initial fees (setup, servers, etc.)	
Annual or monthly fees for ongoing service	
Other ongoing fees	
Other one-time fees	
Cost of future upgrades	
Cost of initial training	
Cost of training to upgrades	