On day one join David Lankes as he looks at current issues and themes in digital or virtual reference. Libraries are taking reference to the web and this is creating challenges for librarians in terms of new skills, staffing requirements, and budget demands. This workshop will cover the basics of virtual reference, virtual reference tools, current trends and a little crystal ball gazing into the virtual reference future.

http://www.DavidLankes.org
Reference in Academic Libraries: Virtual Reference

R. David Lankes
http://www.DavidLankes.org
A New Twist on “Authority Control”
David Lankes: What is the dewey number for books on tattoos?

A librarian will be with you in about a minute. Please do not use your "back", "forward", or "refresh" buttons, or you will be disconnected.

[ Librarian - A librarian has joined the session.]

Librarian: hi. I'll try to find that for you.

Librarian: The books in our library are at call number 391.65 and 391.6
Librarian: I'm answering your question from a library in Calif. What library do you go to? I could look and see whether there are books there on tattoos.

David Lankes: do you know the corresponding dewey that would be?

Librarian: Would you like for me to do that?

David Lankes: I don't need a specific book, just making a funny graphic for a talk I'm doing.

Librarian: Libraries use the same dewey number for the books. That way you could go to another library and look for a similar book in the same area.
Librarian: And you should find books in your library under the same dewey number I just gave you, if your library has books on the subject.

David Lankes: I know, but I would like to know the actual subject hitting that matches the dewey number.

Librarian: When I searched my catalog, I used the keyword term "tattoos".

David Lankes: Do you know a place on the web, or have access to the Dewey classification system?

David Lankes: Perhaps WebDewey?

Librarian: WebDewey? What is that? I looked up ...

Librarian: tattoos in our online system at Books In Print and found the book "Tattoo Icon" and they list it at 391.65

David Lankes: WebDewey is a way to look up terms in the dewey classification system...in essence the resource they used to assign that book to the number 391.65

David Lankes: It's no big deal. The number was a great help.
Librarian: Another title: "Tattoo Nation: Portraits of Celebrity Body Art" has the dewey number: 391.6/5

Librarian: Is there a site on the internet for WebDewey?

David Lankes: It probably is just called "tattoos" in dewey, but I'll be talking with catalogers and sometimes they actually know what names the actual numbers correspond to. Knowing a little about Dewey it might be either tattoos or body art or something else.


David Lankes: You have to pay for access.

Librarian: I'm not a cataloger. You probably have more knowledge on this than I do at the moment.

David Lankes: No problem. Thanks again. Have a good day.
Librarian: You are right that it could be found under different keywords. I was trying to find the most direct, quick answer to your question.

David Lankes: And I got it. I asked for the number. That's what I needed.

Librarian: You're welcome. Thanks for the challenge. Have a good day, yourself.

David Lankes: The name was just a follow-up if you knew.

David Lankes: bye.
## Post Game Summary

<table>
<thead>
<tr>
<th>Total Messages</th>
<th>29</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

Librarian 48%
Me 52%
## Post Game Summary

<p>| | |</p>
<table>
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<td>Closing Messages</td>
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<tr>
<td>Librarian</td>
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</tr>
<tr>
<td>Dave</td>
<td>3</td>
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- Librarian: 25%
- Dave: 75%
## Post Game Summary

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<tr>
<td>Librarian Closing</td>
<td>1</td>
</tr>
<tr>
<td>Dave Closing</td>
<td>3</td>
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<tr>
<td>Librarian</td>
<td>2</td>
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<tr>
<td>(What is Web Dewey, Site for Dewey)</td>
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<td>Dave</td>
<td>3</td>
</tr>
<tr>
<td>(Dewey Number, Class and Site for Dewey)</td>
<td></td>
</tr>
</tbody>
</table>
Uncomfortable?

- Reference is at once both the most public, and private function the library offers.
- While we call it public service, we don’t have the same transparency as technical service.
Libraries Have it Backwards

- Reference is an Unnatural Act
- Admitting Ignorance is Uncomfortable - the Greedy Librarian Problem
- Self Promotion is Human Nature
Agenda

- Why Virtual Reference
- Basics of Virtual Reference
- General Digital Reference Model
- Technical Opportunities
- Expanding Reference Service
Reference by Any Other Name
Reference by Any Other Name

Digital Reference
Reference by Any Other Name

Email Reference
Live Reference
Virtual Reference
Chat Reference
eReference
Digital Reference
Reference by Any Other Name

- Email Reference
- Live Reference
- Virtual Reference
- Chat Reference
- Online Reference
- Digital Reference
- V_Ref
- AskA
- eReference
- Dig_Ref
Reference by Any Other Name

Email Reference

Live Reference

Online Reference

Virtual Reference

Docutek

Chat Reference

Tutor.com

AskA

V_Ref

eReference

Dig_Ref

QuestionPoint
“The use of human intermediation to answer questions in a digital environment”
- The Digital Reference Research Agenda
“The use of human intermediation to answer questions in a digital environment”
- The Digital Reference Research Agenda

An agenda to increase the technical knowledge (and capacity) of libraries and to build bridges (and respect) to the digital library and other communities.
Lankes’ Virtual Reference Perspective

- Reference is an Island of Chaos in a Sea of Library Order...That’s a Good Thing
- Virtual Reference is Different from Traditional Reference - It Creates Artifacts by Default/Design
- Virtual Reference is Beyond Libraries
Purpose, General
Purpose, General

- Answer the Needs of the Constituency
Purpose, General

• Answer the Needs of the Constituency
• Know the Needs of the Constituency
Purpose, Internal
Purpose, Internal

- Organizational Development and “Bonding”
- Develop Group Identity
- Common Policies
- Provide Even Service Distribution
- Provide Innovation Opportunities
- Training
Purpose, External
Purpose, External

• Raise Visibility
Purpose, External

- Raise Visibility
- Demonstrate Innovation
Purpose, External

- Raise Visibility
- Demonstrate Innovation
- Provide Expanded Service
  - Time: Use Time Zones to Your Advantage
  - Expertise: Disconnect Reference from a Physical Collection
General Digital Reference Model
General Digital Reference Model
General Digital Reference Model

- Question Acquisition
- Resource Creation
- Triage
- Answer Formulation
- Tracking
- Triage Center
- User
- Experts
- Q&A Archive
- Web Resources
- Q&A Archive
- Resource Creation
- Tracking
Blueprints
General Digital Reference Model

- Question Acquisition
- Resource Creation
- Triage
- Answer Formulation
- Tracking
- Triage Center
- User
- Experts
- Q&A Archive
- Web Resources
- Resource Creation
- Q&A Archive
- Tracking
- Experts
- Triage Center
- Answer Formulation
- User
- Resource Creation
- Web Resources
Question Acquisition

- How Do Users Ask Questions
  - Modes: IM, E-Mail, Web?
  - Integrated with Other Reference?
  - Web Forms
VR Modes

- Commercial “Chat” VR Software
- E-Mail
- IM
- Blogs
- Custom Web Applications
“Chat”

- Library Centric Software
  - Good: Matches Needs and Expectations of the Library Community
  - Bad: Doesn’t Match Anyone Else’s

Onondaga County Public Library
447 South Salina Street, Syracuse, NY 13202-2494

Telephone: (315) 435-1900
Email: reference@onlib.org

Welcome to Live Online Reference.

Please enter the information requested on the right side of your browser window, and click the connect button.

24/7 Reference is a new service that lets you get answers to your questions in real time over the Internet. The service is staffed by reference librarians in Onondaga County and throughout the country.

During your session, please do not do any of the following, or you may be disconnected:

- Type a new URL in this browser window
- Use the forward or refresh/reload buttons on your browser
- Add a site to your favorites or bookmarks list

While you are waiting, you can browse the OCPL website:

- Library Catalog
- Databases
- Internet Links
## Commercial “Chat”

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meets Expectations of Librarians</td>
<td>Meets No One Else’s Scripts</td>
</tr>
<tr>
<td>Scripts</td>
<td>Scripts</td>
</tr>
<tr>
<td>Archives</td>
<td>Archives on Hosted Servers</td>
</tr>
<tr>
<td>Queuing</td>
<td></td>
</tr>
<tr>
<td>Statistics</td>
<td></td>
</tr>
</tbody>
</table>
E-Mail

- 58 Million Americans do E-Mail at Least Once a Day - Number 1 Activity

## E-Mail

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part of Daily Workflow</td>
<td>So is Spam</td>
</tr>
<tr>
<td>Accommodates Rich Media Types</td>
<td>Like Viruses</td>
</tr>
<tr>
<td>Well Established Protocols</td>
<td>Set in the 1980’s</td>
</tr>
</tbody>
</table>
Instant Messaging

- 53 million adults trade instant messages and 24% of them swap IMs more frequently than email. IM also gains a following in U.S. workplaces.

## Instant Messaging

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free</td>
<td>Proprietary</td>
</tr>
<tr>
<td>Real Time</td>
<td>No Queuing</td>
</tr>
<tr>
<td>Cross Platform</td>
<td>Limited Media Types</td>
</tr>
</tbody>
</table>
Blogs

- 7% (8 million people) of the 120 million U.S. adults who use the internet have created a blog.
- 27% of internet users say they read blogs.
- 5% of internet users say they use RSS aggregators or XML readers.
- 12% of internet users have posted comments or other material on blogs.

http://www.pewinternet.org/pdfs/PIP_blogging_data.pdf
OpenQA

- Open Source Blog Based Digital Reference Package
- StoryStarters
<table>
<thead>
<tr>
<th><strong>Pros</strong></th>
<th><strong>Cons</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy to Update</td>
<td>Built for Diaries</td>
</tr>
<tr>
<td>Built in Comments</td>
<td>Comment Spam</td>
</tr>
<tr>
<td>RSS</td>
<td>Hard to Highlight Comments</td>
</tr>
<tr>
<td>Modifiable</td>
<td>PHP Knowledge Needed</td>
</tr>
</tbody>
</table>
Custom Web Apps

- Do not be Afraid
- Rise of Open Source and LAMP

Costs on a Curve
Costs on a Curve
Costs on a Curve

- Development: XML, RDF
- Early Adoption: Metadata, Portal, Digital Reference

Cost vs. Time Graph
Costs on a Curve

<table>
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<tr>
<th>Development</th>
<th>Early Adoption</th>
<th>Adoption</th>
</tr>
</thead>
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<td>XML, RDF</td>
<td>Metadata, Portal, Digital Reference</td>
<td>Web Servers, OPACS</td>
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Costs on a Curve

Development
XML, RDF

Early Adoption
Metadata, Portal, Digital Reference

Adoption
Web Servers, OPACS

Laggards
WySE Terminals, Text-Based OPACS

Cost
Time
So What is LAMP

- Collection of Commonly Used, but Independent, Open Source Software
  - LINUX
  - Apache
  - MySQL
  - PHP (PERL, Python)
Open Source Advantages

• A Great Deal of Pre-Existing and Diverse Work
• Large Scale Distributed Building Community
• Increasingly Sophisticated Systems
• Increasingly Standardized Development/Implementation Environment
Old Open Source Environment

- Open Source was Just That... Source Code
- Single Owner
- Every Project Unique
- Compiled Code
  - C, Java, Home Grown
Learning Curve
Learning Curve with Web Development Environments
Learning Curve with Web Development Environments?

- OS Integration
- Database
- Web Server
- Scripting Engine
Proprietary Solutions

Microsoft
- .ASP, .NET
- OS: Windows
- Database: MSSQL, Access
- Web Server: IIS
- Scripting Engine: ASP

Macromedia
- ColdFusion
- OS: Windows, Linux, Unix
- Database: Various
- Scripting Engine: Coldfusion
Advantages

• Software Reuse

• Basic Services: Security, Backup, Statistics, etc.

• Built-in Functions: Database Connectivity, Display, XML, etc.
Disadvantages

- Locked Into Vendor Design Path and Timeline
- OS Lock-In
- Limited Ability to Disseminate Product
- Expensive to Replicate Environment
LAMP Emerges

- Linux
- Apache
- MySQL
- PHP, PERL, or Python
LAMP Emerges

- Linux - OS Integration
- Apache - Web Server
- MySQL - Database
- PHP, PERL, or Python - Scripting Engine
So What Will Your Form Look Like?

- Your Face on the Internet IS the first Step in a Reference Interview
Onondaga County Public Library
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- Internet Links
IPL Ask A Question Form

Need an answer fast? Hundreds of our most popular questions and answers are listed on our Frequently-Asked Reference Questions pages.

Want to know more about how the IPL "Ask a Question" Service works?

Please review our Privacy Statement before submitting your question.

* required information

Name*  
E-mail*  
Provide a complete e-mail address (example: julie@yale.edu) so that we can reply.

Confirm e-mail*  
Enter the same e-mail address here as you did above.

Where do you live?  
This helps to ensure that we have your correct e-mail address, and that we will receive a reply as quickly as possible.

Deadline for reply*  
If you have parental or mail controls turned on, please add ipl@ipl.org to your allowed mail list.

3 days are usually needed for us to reply.

Subject*  
Knowing where you live helps us recommend resources that are relevant, and accessible, to your area.

11. If you need an answer in less than 3 days, please consider these other resources instead of the IPL.

How will you use this information?  
Understanding the context and scope of your information needs helps us to deliver an answer that you will find useful.

Is this for a school assignment?  
A human being will read your question, so please use complete sentences. The more you tell us, the better the answer will be. What do you already know about your subject or question?

Your question*  
Knowing where you've already looked will help us keep from sending you someplace you've already been.

Sources already consulted  

Submit Question

Please review our Privacy Statement before submitting your question.
Ask a Librarian...

an online reference service from the Library of Congress

Reference Correspondence Policy - Error Reports - Virtual Reference Shelf - Virtual Programs and Services

Select a link below, based on the subject of your question:

<table>
<thead>
<tr>
<th>General Collections</th>
<th>International Collections</th>
<th>Special Formats &amp; Genre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business</td>
<td>African/Middle Eastern</td>
<td>American Folklife Center</td>
</tr>
<tr>
<td>Humanities/Social Sciences</td>
<td>Asian</td>
<td>Geography &amp; Maps</td>
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<tr>
<td>Law</td>
<td>European</td>
<td>Manuscript</td>
</tr>
<tr>
<td>Low News</td>
<td>Hispanic (select a language): English, Español, Portugués</td>
<td>Microform</td>
</tr>
<tr>
<td>Local History/Genealogy</td>
<td>Newspapers/Periodicals</td>
<td>Motion Pictures &amp; Television</td>
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<td>Science/Technology</td>
<td>Music &amp; Performing Arts</td>
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<td>Science/Technology</td>
<td></td>
<td>Prints &amp; Photographs</td>
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<td>Rare Books &amp; Special Collections</td>
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<td></td>
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<td>Recorded Sound</td>
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Digital Collections

- American Memory Historical Collections
- Digital Reference Team
- Learning Page (for K-12)

Other Library Programs and Services

- Access to Collections
- Interlibrary Loan
- Borrowing Accounts
- Nat'l Library Service for Blind/Physically Handicapped
- Cataloging in Publication
- Preassigned Card Numbers
- Copyright Registration and Programs
- Photoduplication Service
- Federal Research Division
- Preservation

- Still don't know where to send your question?
Ask a librarian...

an online reference service from the Library of Congress

Please read the following before you begin:

- You will receive a reply within five business days.
- This Ask a Librarian form uses QuestionPoint, a global, collaborative reference service. May we have your permission to forward your question outside the Library of Congress if necessary and to archive your question and corresponding answer? [Yes] [No] (All personal information will be removed prior to archiving.)
- See the Library of Congress policy on privacy for further clarification.

Questions

Ask a Question | Check Your Questions and Answers

Asterisk (*) denotes required field.

*Email Address:  
*Confirm email address:  
*Question:  

*Your Name:  
*Reason for Research:  Select one  
*Education Level:  Select one  
Mailing Address:  
*City and State/Province:  
*Zip/Postal Code:  
*Country:  
Telephone Number:  

Resources consulted (Where have you looked already?):  

Ask

Services we can provide
- Assistance using digital collections/services  
- Assistance on searching the Library of Congress Online Catalog  
- Response within 5 business days  

Reporting errors to the Library
- General errors: use our error report form  
- Catalog/authority record errors: use our Catalog/authority error report form

For other questions, try...
- The Virtual Reference Shelf: a selected listing of free Internet reference tools, compiled by the Library of Congress.
- For questions on using the Online Catalog, try the Frequently Asked Questions.

Some questions are better answered elsewhere:
- Public Libraries: your local public libraries may offer online services for finding information.
- See the Library’s MINERVA project or the Internet Archive.
- Technical information for American Memory, Digital Preservation and MARC Standards.

If you have any problems with this service, please use our Ask a Librarian Error Report Form.

Please Note: Your reply will be sent via email. If you want to follow up, or check the progress of your answer, you will need to create a password the first time you visit our “Check your Questions and Answers” page. Use the address in the email notification you receive to set up your account.

Virtual Programs and Services - Ask a Librarian Home Page

The Library of Congress  
February 7, 2006
## Build Your Own

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<th>Cons</th>
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<tbody>
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<td>Control</td>
<td>Responsibility</td>
</tr>
<tr>
<td>You Pick Features</td>
<td>You Create Features</td>
</tr>
<tr>
<td>Lots of Open Source</td>
<td>Open Source</td>
</tr>
<tr>
<td>Not Hosted</td>
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Triage

- Who Gets the Next Question? Who Decides?
- Automation Question Routing
  - Sandwich Interface: Question $\rightarrow$ Search $\rightarrow$ Expert
- Consortial Level Issues
  - Know who you are “triaging” to
Facets of Quality

User Transactions
- Accessible
- Prompt Turnaround
- Clear Response Policy
- Interactive
- Instructive

Service Development and Management
- Authoritative
- Trained Experts
- Private
- Reviewed
- Provides access to related information
- Publicize
Answer Formulation/Experts

- Are All Librarians Equal
- Including Experts from Across the Academy
- Resources to Use in an Answer
- Answer Policies
  - Types of Answers, Appropriate Use
Tracking/Statistics

- Who Needs What Statistics?
- How Can we Anticipate Trends?
- How Can We Improve Quality?
Quality Standards

- Courtesy: The behavior of the library or institution’s staff
- Accuracy: The “correctness” of answers provided by a digital reference staff
- Satisfaction: Users determination of their success in interacting with the digital reference service
- Repeat Users: The percentage of users that re-use a service after first encounters
- Awareness: The population user group’s knowledge that the service exists
- Cost: The cost per digital reference
Performance Measures

- Descriptive Statistics and Measures: Statistics and Measures to determine the scale and scope of a digital reference service.
- Log Analysis: Statistics that can be derived from analysis of logs generated by web and digital reference software packages.
- User Satisfaction Measures: Statistics and metrics seeking to understand the user view of a digital reference service.
- Cost: Measures that gage outlay of financial resources to run an ongoing digital reference effort.
- Staff Time Expended: Measures to determine staff time dedicated to digital reference.
<table>
<thead>
<tr>
<th><strong>Descriptive</strong></th>
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<th><strong>User</strong></th>
<th><strong>Cost</strong></th>
<th><strong>Staff</strong></th>
</tr>
</thead>
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<tr>
<td>Number of digital reference questions received</td>
<td>Number of digital reference sessions</td>
<td>Awareness of Service</td>
<td>Cost of digital reference service</td>
<td>Percent of staff time spent overseeing technology</td>
</tr>
<tr>
<td>Number of digital reference responses</td>
<td>Usage of digital reference service by day of the week</td>
<td>Accessibility of service</td>
<td>Cost of digital reference service as a percent of total reference budget</td>
<td>Percent of staff time spent assisting users with technology</td>
</tr>
<tr>
<td>Number of digital reference answers</td>
<td>Usage of digital reference service by time of day</td>
<td>Expectations for service</td>
<td>Cost of digital reference service as a percent of total library or organizational budget</td>
<td></td>
</tr>
<tr>
<td>Total reference activity</td>
<td>User’s browser</td>
<td>Other sources user tried</td>
<td></td>
<td></td>
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<tr>
<td>Percentage of digital reference questions to total reference questions</td>
<td>User’s platform</td>
<td>Reasons for use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digital reference correct answer fill rate</td>
<td></td>
<td>Reasons for non use</td>
<td></td>
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<td>Repeat users (return rate)</td>
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</tbody>
</table>
Resource Creation

• Take Back the Web!
TAKE THE WEB!

Mrs. Angelina Eberly firing off a cannon
Do You Have Control of the Web?

- Can You Update Information on Your Web Site in 15 Minutes - From any Computer? From Home? From Tokyo?

- How Many “Brands” are on Your Web Site?
  - Library, Academy, EBSCO, ISI, OCLC...

- Is “Your Web Site” and the Academy’s the Same?

- What Does Your Site Promote...Librarians or Buildings?
Key Technologies

- RSS/Blogs
- Web/Wiki
- IM
- “Chat Reference” is not chat
- E-Mail
- 4 Color Offset Printers and Large Format Ink Jet Printers
“I'm not a cataloger”
Reference IS Tool Building

• Reference is a Delightful Island of Chaos in a See of Structure
• Pathfinders, Bibliographies
• Websites, Blogs, Wiki’s
• Who is Better Qualified to Design Cross-Content systems?
• Open Source Comes to the Masses
BYOS: Build Your Own Search Engine

- Lot’s of Good Open Source Search Engine Packages
  - Sphider
  - Nutch
Beyond Reference

- Cataloging as Customer Service
- Organize Data and Materials for Faculty and Other Units
- Archiving and Preservation
- Document Management
Old Model

- Library as a Separate Process and Collection from the Academy’s Core Business
- Enhance and Facilitate
- Emphasis on External Documents
Old Model

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Old Model

- Library as a Separate Process and Collection from the Academy’s Core Business
- Enhance and Facilitate
- Emphasis on External Documents
New Model

- Library as Information “Collector” and “Enhancer” of the Organization’s Information
- Institutional Repository
- Emphasis on Synthesis
- Sees the Complexity of the Academy
What Does This Mean for Reference

• Don’t Wait...Burn the Desk
  • or at least use it as cool furniture in your home like the card catalogs you store CD’s in

• Get on Grants

• Attend Faculty Meetings
Defining the Team

• Core Librarianship: Access, Organization, Design, Conservation

• Extended Family: Coders, Marketers, Content Experts

• Everything Old is New Again - Subject Scholars, Historians, etc...
Some Ideas
Projects and Tactics to Take Over the World
Be an Active Part of the Tenure Process

- Begin an “In Depth” Citation Review Service
- Make It Part of Standing Tenure Practices
Be an Active Part of the Research Process

- Be the Sustainability and Clearinghouse Portion of a Research Project
- Create a Depository Data Program
- Make It Part of Institutional Review
Be an Active Part of the Teaching Process

• Banish the following: Bibliographic Instruction, BI - Use “Instruction”

• Create (Jointly) the Following Course: “Hacking College”

• Become the Instruction Materials Archive and Outcomes Assessment Data Warehouse
Be an Active Part of the Dissemination Process

- Be the Full Service Web Host for the University
- More Than Just Space
- Design, Blogs, Content Management, Document Delivery
Questions, Corrections, Arguments
Survey of the Environment Worksheet

1. Service Type:
   __Topical Area: ________________________________________
   __Audience Type: ______________________________________
   __Other: ______________________________________________
   __General Reference

2. Intended Users:
   __Undergraduates
   __Graduates
   __Faculty
   __General Public
   __K-12 Students
   __Alumni
   __Other: ______________________________________________

3. Stakeholders:
   __Librarians
   __Administration
   __Students
   __Faculty
   __Technologists
   __Other: ______________________________________________

User Needs Survey

1. Survey Audience:

2. Primary Survey Questions:

3. Survey Methods
   __Listservs/Mailing Lists
   __Mail/E-Mail
   __Phone
   __Informal Discussions
   __Literature Research
   __Focus Groups
   __Other: ______________________________________________
Question Acquisition Worksheet

Who Do You Expect to Ask Questions?

What Communication Modes Do These Groups Use Most?

What Do These Groups Have in Common with Each Other? Themselves?

What Questions Should You Ask Everyone?

A Specific Group?

What Do Users Need to Know Before they Ask a Question?
<table>
<thead>
<tr>
<th><strong>Descriptive</strong></th>
<th><strong>Log</strong></th>
<th><strong>User</strong></th>
<th><strong>Cost</strong></th>
<th><strong>Staff</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of digital reference questions received</td>
<td>Number of digital reference sessions</td>
<td>Awareness of Service</td>
<td>Cost of digital reference service</td>
<td>Percent of staff time spent overseeing technology</td>
</tr>
<tr>
<td>Number of digital reference responses</td>
<td>Usage of digital reference service by day of the week</td>
<td>Accessibility of service</td>
<td>Cost of digital reference service as a percent of total reference budget</td>
<td>Percent of staff time spent assisting users with technology</td>
</tr>
<tr>
<td>Number of digital reference answers</td>
<td>Usage of digital reference service by time of day</td>
<td>Expectations for service</td>
<td>Cost of digital reference service as a percent of total library or organizational budget</td>
<td></td>
</tr>
<tr>
<td>Total reference activity</td>
<td>User’s browser</td>
<td>Other sources user tried</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage of digital reference questions to total reference questions</td>
<td>User’s platform</td>
<td>Reasons for use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digital reference correct answer fill rate</td>
<td></td>
<td>Reasons for non use</td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
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</tr>
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</table>
User Transaction

**Accessible**: Digital reference services should be easily reachable and navigable by any Internet user regardless of equipment sophistication, physical disability or language barrier.

*Essential:
Recommendations:*

**Prompt Turnaround**: Questions should be addressed as quickly as possible. Actual turnaround time depends on a service's question-answer policy and available resources (e.g., staffing, funds, technology, etc.).

*Essential:
Recommendations:*

**Clear Response Policy**: Clear communication should occur either before or at the start of every digital reference transaction in order to reduce opportunities for user confusion and inappropriate inquiries.

*Essential:
Recommendations:*

**Interactive**: Digital reference services should provide opportunities for an effective reference interview, so that users can communicate necessary information to experts and to clarify vague user questions.

*Essential:
Recommendations:*

**Instructive**: Digital reference services provide access to current information and expertise. Quality digital reference services offer more to users than straight, factual answers; they guide them in how to formulate questions, subject knowledge, and information literacy.

*Essential:
Recommendations:*
Service Development and Management

**Authoritative:** Experts of a digital reference service should have the necessary knowledge and educational background in the service's given subject area or skill in order to qualify as an expert. Specific levels of knowledge, skill and experience are determined by each service and its related discipline or field.

*Essential:*
*Recommendations:*

**Trained Experts:** Services should offer effective orientation or training processes to prepare experts to respond to inquiries using clear and effective language and following service response policies and procedures. Training of information specialists is one of the most important aspects of planning and operating a digital reference service.

*Essential:*
*Recommendations:*

**Private:** All communications between users and experts should be held in complete privacy.

*Essential:*
*Recommendations:*

**Reviewed:** Digital reference services should regularly evaluate their processes and services. Ongoing review and assessment help ensure quality, efficiency, and reliability of transactions as well as overall user satisfaction.

*Essential:*
*Recommendations:*

**Provides access to related information:** Besides offering direct response to user questions, digital reference services should offer access to supporting resources and information. Services can reuse results from question-answer exchanges in resources such as archives and frequently-asked questions (FAQs).

*Essential:*
*Recommendations:*

**Publicize:** Services should inform potential users of the value that can be gained from use of the service. A well-defined public relations plan can ensure that services are well-publicized and promoted on a regular basis. Publicity should not create more demand than the service has capacity to handle.

*Essential:*
*Recommendations:*
## Expert Worksheet

<table>
<thead>
<tr>
<th>Task</th>
<th>Skill</th>
<th>Who</th>
<th>Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determine if this question has been answered before</td>
<td>Search web archives</td>
<td>All experts</td>
<td>Expert Policy</td>
</tr>
<tr>
<td>Conceptual Framework Section</td>
<td>Sub Section</td>
<td>Questions</td>
<td>Considerations/Suggestions</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Detector</td>
<td>Users</td>
<td>How will you keep track of your users?</td>
<td>Determine number of users.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How will you attempt to gather about users of your services?</td>
<td>Determine demographics of users.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What specific mechanisms will you put in place to gather this information?</td>
<td>Use logs (such as logs from a World Wide Web server).</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Keep archives of interactions.</td>
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<td>Provide online feedback forms.</td>
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<td></td>
<td></td>
<td></td>
<td>Conduct focus groups.</td>
</tr>
<tr>
<td>Detector</td>
<td>Information Services</td>
<td>What will you keep track of regarding other virtual reference services?</td>
<td>Surf the Web.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What will you keep track of with other Internet information services in general?</td>
<td>Decide whether or not to assign specific responsibilities to yourself or staff regarding reviewing other sites, doing digital reference, or building Internet sites.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How will you gather ideas from other Internet sites and incorporate them into your own services?</td>
<td>Allot time to review other sites on the Internet.</td>
</tr>
<tr>
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<td>Sub Section</td>
<td>Questions</td>
<td>Considerations/ Suggestions</td>
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<td>---------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Detector</td>
<td>Application Builders</td>
<td>How will you keep current on software available on the Internet?</td>
<td>Use logs to determine the type of software being used to access your site.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How will you determine new trends in software?</td>
<td>Check certain Web sites for software-specific updates.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What specific mechanisms will you put in place to gather this information?</td>
<td>Develop relations with vendors specifically to “keep ahead” of the changing Internet software.</td>
</tr>
<tr>
<td>Detectors</td>
<td>Infrastructure Providers</td>
<td>How will your service connect to the Internet?</td>
<td>Determine type of bandwidth that will be available to your service.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Who will be primarily in charge of this relationship?</td>
<td>Consider technologies such as routing and switching in decisions regarding how you build and maintain your services.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How will you monitor changes in your connection?</td>
<td></td>
</tr>
<tr>
<td>Detectors</td>
<td>Internal Influences</td>
<td>How will you capture ideas generated from those working your service?</td>
<td>Identify staff members to act as innovators.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What specific mechanisms will you put in place to gather this information?</td>
<td>Identify individual(s) to set the vision for the organization.</td>
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<td>----------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------</td>
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<tr>
<td>Detectors</td>
<td>External Influences</td>
<td>How will forces outside of the Internet affect your service?</td>
<td>How do funder influences on day-to-day service agenda. Influence of larger marketing or systems concerns.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What non-Internet sources of information will inform how to build and maintain your service?</td>
<td>Determine the needs of the larger organization in terms of your service.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What specific mechanisms will you put in place to gather this information?</td>
<td></td>
</tr>
<tr>
<td>Rules</td>
<td>Detector Information Processing</td>
<td>How will you prioritize the information acquired from the Internet, internal sources, and external sources?</td>
<td>Consider priority by type of information (such as users)?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How will this information link into your daily procedures?</td>
<td>Hold daily or weekly meetings to discuss what’s happening outside of the organization.</td>
</tr>
<tr>
<td>Rules</td>
<td>Process</td>
<td>How will you answer the questions of your community?</td>
<td>Determine method for archiving questions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How will you gather and distribute questions and then ensure users get answers?</td>
<td>Determine methods for modifying existing service or creating new services.</td>
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</table>
| Rules                       | Resource Types | What hardware and software tools will you use to build and maintain your service?  
How many people will be involved within the organization in the digital reference service?  
What policies will you put in place to guide the operation of this service? | Use the Web to answer your community’s questions (or e-mail or other Internet tools).  
Consider hardware requirements involved in conducting this service. |                  |
| Rules                       | Resource Types (People) | What skills are required of the people who build and maintain this service?  
Will the people processing the questions have high technical skills? | Identify roles in service processes.  
Identify roles of different people.  
Determine whether or not there is a need to distinguish between those who process the questions (intermediaries) and those who answer the questions (the collection). |                  |
| Rules                       | Effector Tie-Ins | What policies or decision-making structures will you put in place for modifying your existing services or creating new services? | Consider stakeholders’ expectations (such as users or funders). |                  |
| Effectors                   | Technical     | What types of Internet tools will be used to deliver information to the community? | Provide:  
Web site  
FTP site |                  |
<table>
<thead>
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<th>Sub Section</th>
<th>Questions</th>
<th>Considerations/ Suggestions</th>
<th>Answers/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effectors</td>
<td>Other</td>
<td>What others types of services will you offer to the community?</td>
<td>Provide: Toll-free telephone number Multiple Web sites Workshops or conferences</td>
<td></td>
</tr>
</tbody>
</table>
Useful Links

R. David Lankes and Workshop Slides:
http://www.DavidLankes.org

Virtual Reference Desk:
http://www.vrd.org and
http://www.webjunction.org/do/Navigation;jsessionid=631E1AB3D2CBEE33D7BD531E55A83CFC?category=11649

Quality Standards:

AskA Starter Kit:

WordPress:
http://www.wordpress.org

TikiWiki:
http://tikiwiki.org

StoryStarters and OpenQA:
http://storystarters.iis.syr.edu
http://iis.syr.edu/tiki-index.php?page=OpenQA