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Automated Reference Assistance: Reference for a New Generation

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Automated Reference Assistance: Reference for a New Generation





Denise Troll Covey
Associate University Librarian
Carnegie Mellon
CNI Meeting – April 2002

What is the ARA?

- Software designed to
 - Enhance, not replace traditional reference service
 - Elicit information about users & what they need
 - Suggest appropriate resources
 - Operate 24 x 7

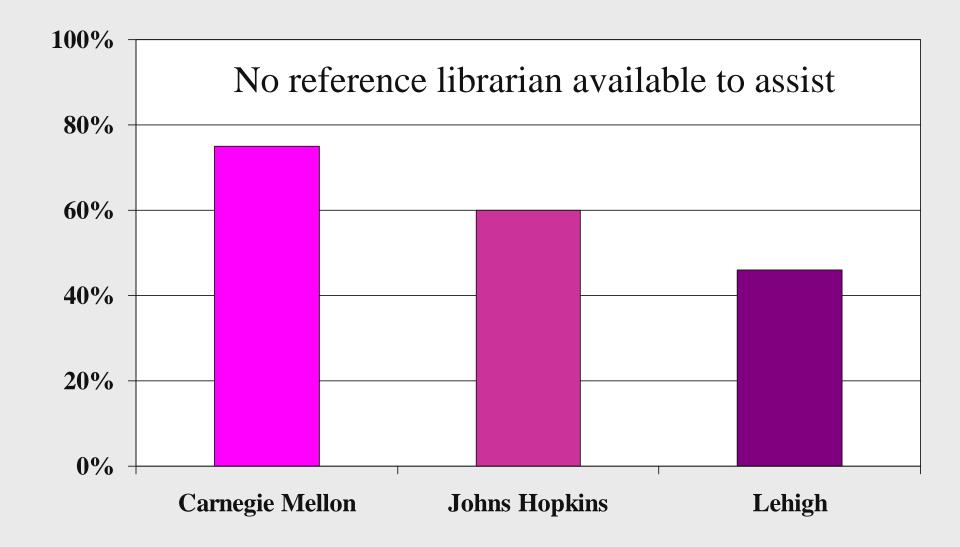


Why is the ARA?

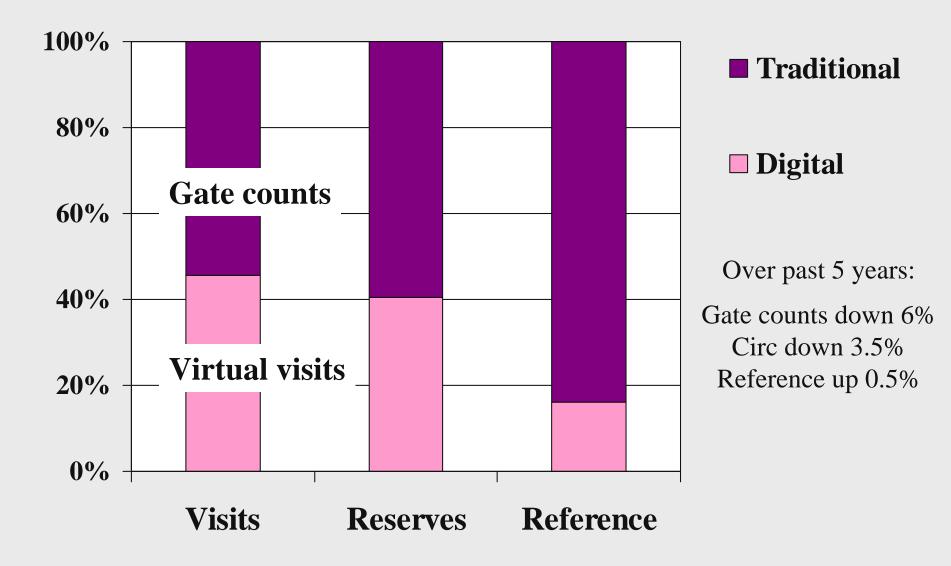
- Users value convenience, speed, ease-of-use
 - Prefer remote access, e-resources, & independence
 - U-grad students use inappropriate e-resources
 - Less than 6% of surface Web is scholarly content
 - No single Web search engine indexes more than 16%
 - Web magnifies problems with poor search strategies
- The number, names, & content of e-resources overwhelm & confuse both users & librarians



1999 Remote Use of E-Resources

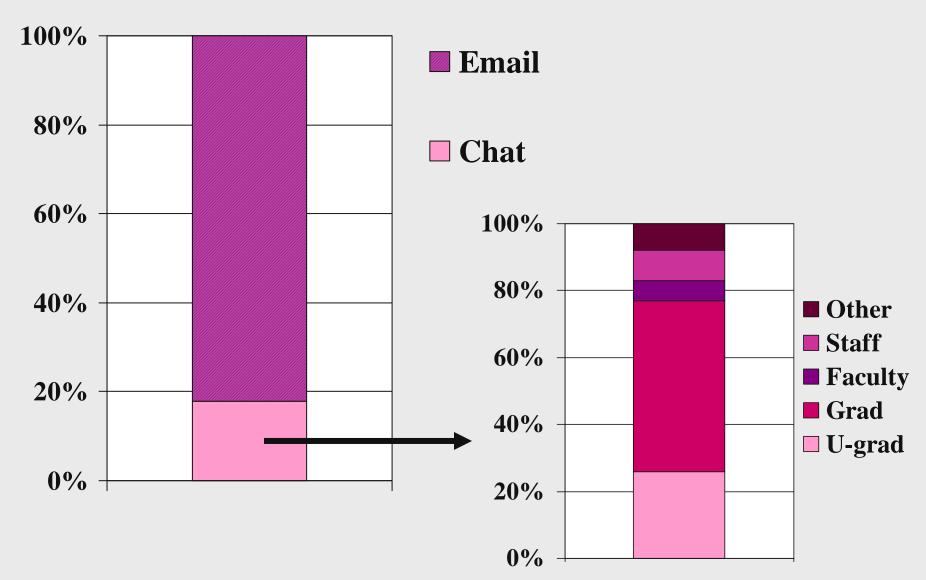


2000-01 Statistics

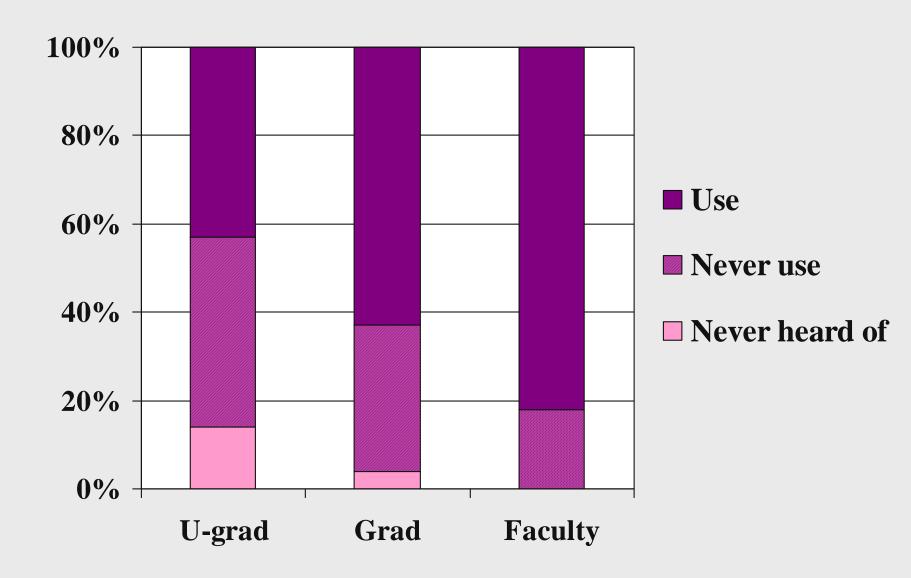




16% of Reference is Digital



1998 Survey Reference Service



Goals of the ARA

- Intervene & guide
- Facilitate learning & independence
- Match preferences & lifestyles
- Begin to close the gap
 between perceived ease
 of using the Web
 & perceived cumbersomeness
 of using the library





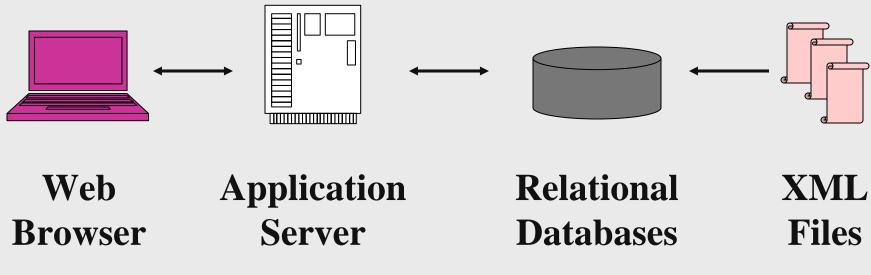
What the ARA Does

- Interviews users
- Limits the number of resources to choose from
- Dynamically groups the resources available
- Provides information about the resources
- Provides links to resources
- Submits queries to resources





ARA Architecture



Inference Engine

Reference Interview Resource Database Journal Information



ARA Web User Interface

A	D	A.
\boldsymbol{A}	$\mathbf{\Gamma}$	A

CMU Libraries / ARA Home / Search History / Help

Welcome to the ARA, CMU's Automated Reference Assistant.

I can help you find books, journals, articles and other resources. Currently, I know of 63 sources of information that might be useful for you.

Tell me what you're looking for:					
You're looking for a book	about			Submit	
	called			Submit	
	written by			Submit	
You're looking for an article	in the journal named			Submit	
	in the subject area	Arts	V	Submit	
You're looking for information	about			Submit	
	in the subject area	Art and Architecture	•	Submit	

ARA Inference Engine

- Interviews user to focus the information need
- Converts user's information need into a query of the Resource database
 & Reference Interview database
- Transforms the results of the query into useful reference advice, a list of suggested resources,
 & follow-up questions

ARA Reference Interview Database

- Set of questions a librarian might ask a user
- Information about when it's appropriate to ask each question
- Actions associated with each answer
 - To update the factsthe ARA "knows"about what the useris looking for



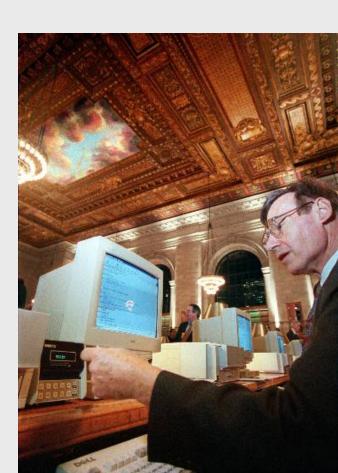
ARA Resource Database

- Contains facts about every resource the ARA "knows"
 - Resource name
 - Resource level
 - Dates of coverage
 - Item types
 - Subject areas
 - Dewey Decimal ranges
 - Full text availability
 - Internet address

- Full descriptions
- Brief descriptions
- Other facts
 - ✓ Atlas = maps & geography
 - ✓ Encyclopedia = general information
 - ✓ Poems = can be located through concordances & indexes of first lines

ARA Journal Information Database

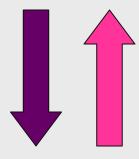
- Identify databases that index a journal
- Identify databases with full-text
- Disambiguate journal titles
- Incorporated from JAKE





ARA Action

User answers questions & submits a request



Advice, a ranked list of resources & follow-up questions

Inference Engine

Converts user information need into a query

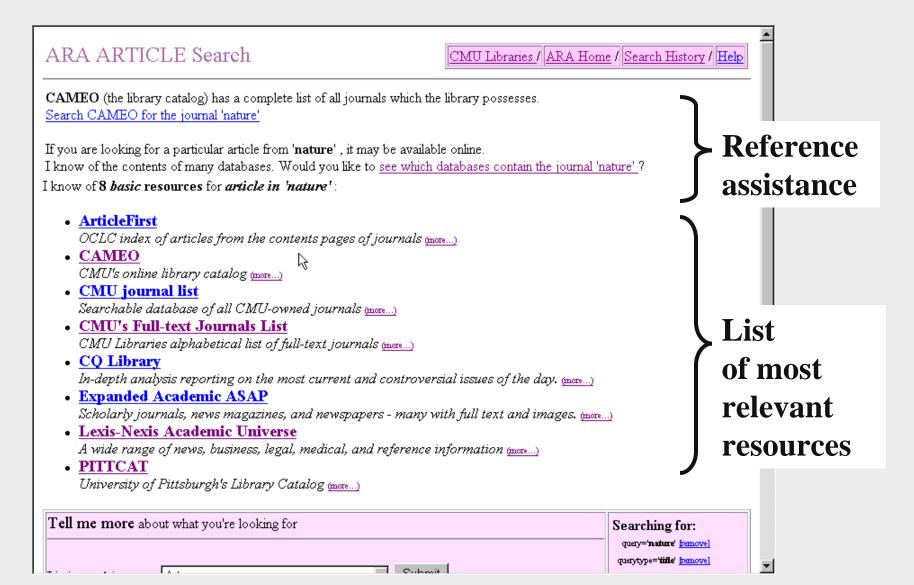


Reference Interview database
Algorithm determines
which follow-up questions
are valid for which user-provided facts

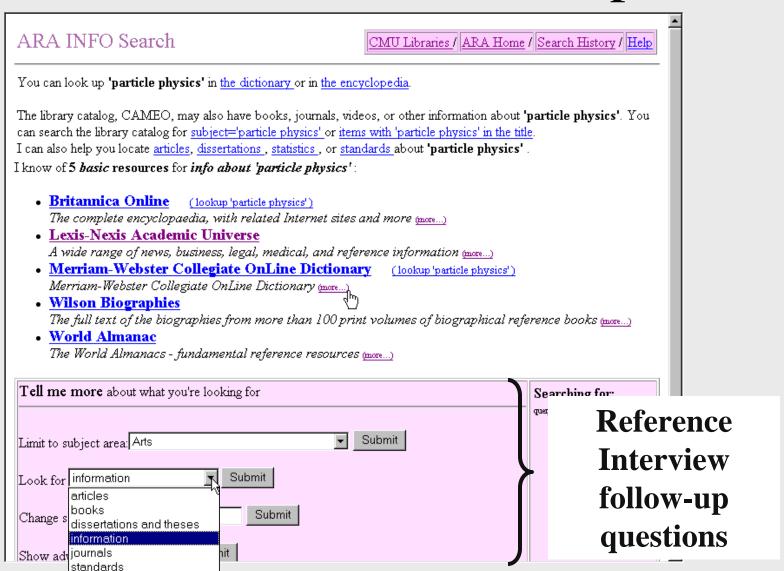


Resource database
Algorithm determines
which resources are
appropriate to user need

Resource Database Example



Reference Interview Example



statistics

ARA Technology

- Inference & resource information stored in XML
- Oracle 8i relational database technology
- Information retrieved by Java Beans
- Interface constructed using Java Server Pages
- Easy to add, remove, or modify resources
- Easy to customize

ARA Schedule

- Spring 2002
 - Index all e-resources in the Resource Database
 - Conduct user study & revise interface
 - Submit grant proposal
- Summer 2002 release prototype
- Fall 2002
 - Market the ARA on campus
 - Monitor & study usage

ARA 2002-2004

- Improve the Inference Engine & Interview model
- Improve interface design & functionality
- Index print resources in the Resource Database
- Integrate chat software
 - No evidence that simply using appropriate resources will improve student work



ARA Dreams

- Enable spoken dialog between users & librarians
- Enable users to select a reference personality
 - Implement multiple virtual reality agents

✓ African American

✓ Male

✓ Asian

✓ Female

✓ Hispanic

✓ Young

✓ Punk

✓ Old



 Commercialize & offer ARA versions adapted for different kinds of libraries

Thank you!

Photos from Associated Press Photo Archives

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