



# OPAC Search and Navigation

North Carolina State University Success Story

Deidre Caldbeck  
Endeca Technologies, Inc.  
November 28, 2006

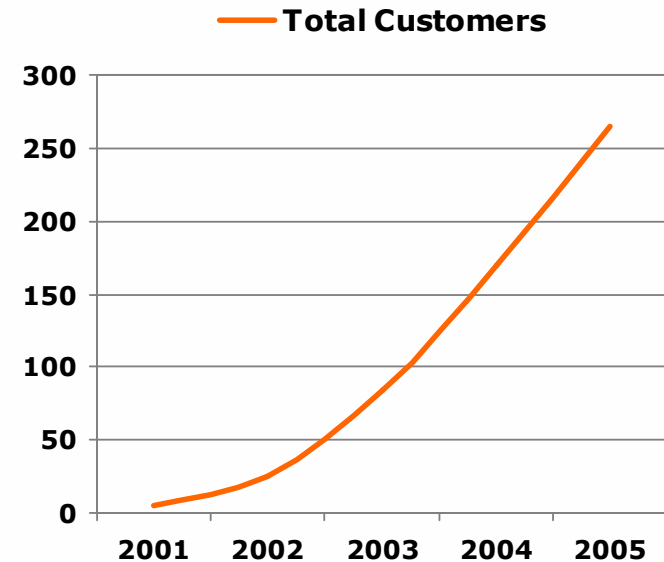


# Agenda

- Endeca Company Overview
- Information Access Gaps in Academic Institutions
- Endeca Information Access Platform
- North Carolina State University Success Story
- Q&A

## Innovation drives our growth

- Annual revenue growth exceeding **135%** each of the past 5 years
- Patented core technology
- Industry accolades



# Leading global customers



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# The Information Access Leader in Higher Education and Research



Florida Center  
For Library Automation



Harvard Business School  
Publishing



Inspiring Innovation and Discovery

**NC STATE UNIVERSITY**



## Endeca delivers business results



B2C eCommerce → Conversion rate increased 30%



B2B eCommerce → Conversion rate increased 75%



Web Site Search → Content downloads increased 400%



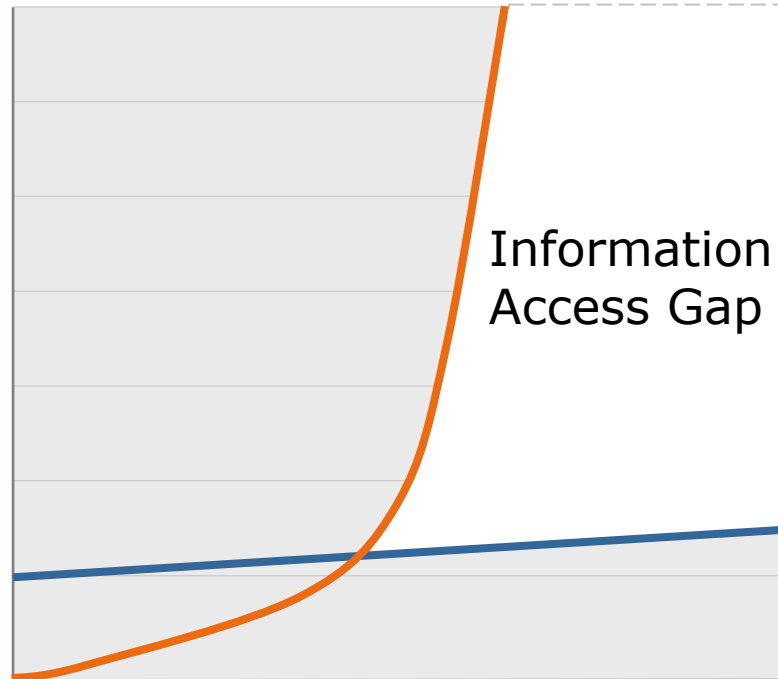
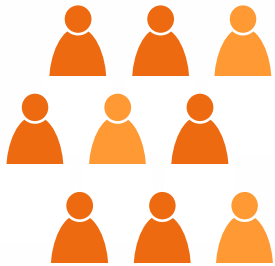
Directory → Saved \$500M through better consultant staffing analysis



Online Publishing → Page views increased 20%

# Information Access Gap

Variety in user paths



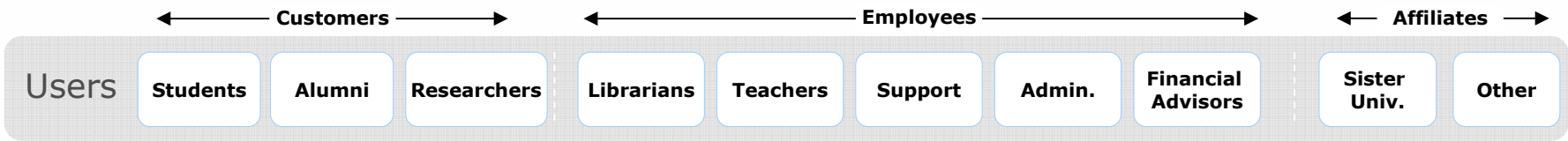
Unique user paths desired

Unique user paths supported

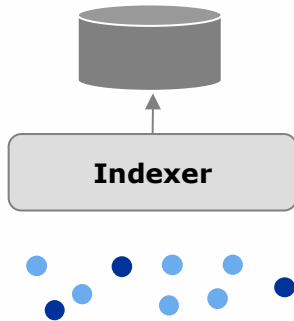
Variety in data and content



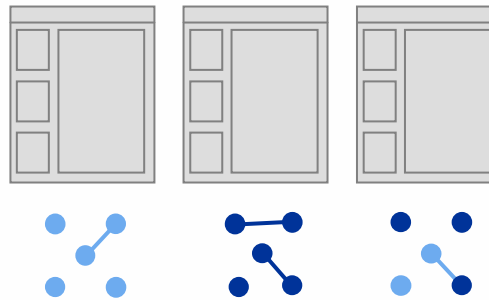
# Information Access Gap



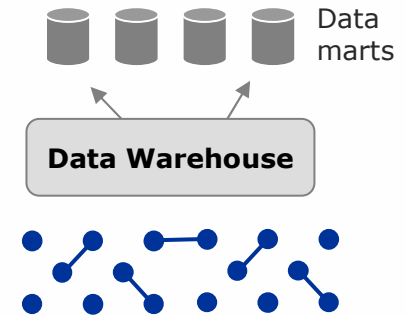
## Traditional Search



## Traditional Applications



## Traditional BI



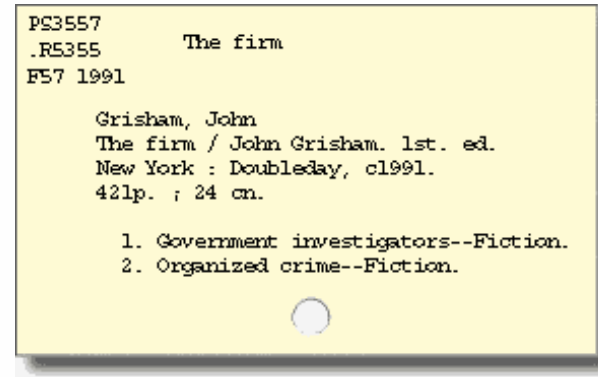


# Elements Of Information Retrieval

- Cataloging / IA



- Backend



- User Interface



# Computerized Library – Cataloging / Backend

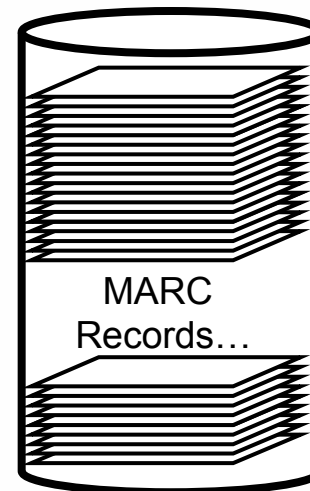
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2. Organized crime--Fiction.

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## Cataloging / IA MARC records



## Integrated Library System Backend



## Computerized Library – User Interface

# Where is the Cataloging?



Search:

You're searching: **Metro-Boston Library Network**

[Full Catalog](#)

[Journals](#)

[Reserves](#)

[Digital Resources](#)

[Help](#)

[Search](#)

[Expanded Search](#)

[Command](#)

[Previous searches](#)

[Results list](#)

[Display](#)

## Search Tools for Information Overload:

- Query expansion
- Relevance ranking
- Sorting

### RESULTS LIST: FULL CATALOG

Records 1 - 20 of 25652

**SEARCH LIMIT REACHED:** This Results List shows the last 1,000 records added to the catalog that match your search. For best results, modify your search to retrieve fewer than 1,000 records.

Select All | Deselect All

Print/Save/Send

Create Subset

Add to List

View List

Results for **W-all keywords= civil war**; Sorted by: Year, then Author

To change sort order, click on column heading.

#	<a href="#">Author</a>	<a href="#">Title</a>	<a href="#">Year</a>	<a href="#">Format</a>
<input type="checkbox"/> 1	Ashdown, Paul, 1944-	<a href="#">The myth of Nathan Bedford Forrest /</a>	2005	BK
<input type="checkbox"/> 2	Ballard, Michael B.	<a href="#">U.S. Grant : the making of a general, 1861-1863 /</a>	2005	BK
<input type="checkbox"/> 3	Boggs, Carl.	<a href="#">Imperial delusions : American militarism and endless war /</a>	2005	BK
<input type="checkbox"/> 4	Bowery, Charles R.	<a href="#">Lee &amp; Grant : profiles in leadership from the battlefields of Virginia /</a>	2005	BK
<input type="checkbox"/> 5	Bundy, Carol, 1958-	<a href="#">The nature of sacrifice : a biography of Charles Russell Lowell, Jr. /</a>	2005	BK
<input type="checkbox"/> 6	Caplan, Richard (Richard D.)	<a href="#">International governance of war-torn territories : rule and reconstruction /</a>	2005	BK

Full Catalog Journals Reserves Digital Resources

Search Expanded Search Command  
Previous searches Results list Display

RESULTS LIST: FULL CATALOG  
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<input type="checkbox"/> 6	Caplan, Richard (Richard D.)	<a href="#">International governance of war-torn territories : rule and reconstruction /</a>

Search Tools for Information Overload:

- Query expansion
- Relevance ranking
- Sorting

But this leaves us with 3 distinct problems...

- Million or None
- Search Frame
- Discovery



## Endeca's unique architectural capability: **Adaptivity**

Adaptivity is  
the **dynamic calculation** of  
**relationships among relationships**  
in the current view

Based on

- 1) the user's actions
- 2) the possibilities in the data
- 3) any business rules

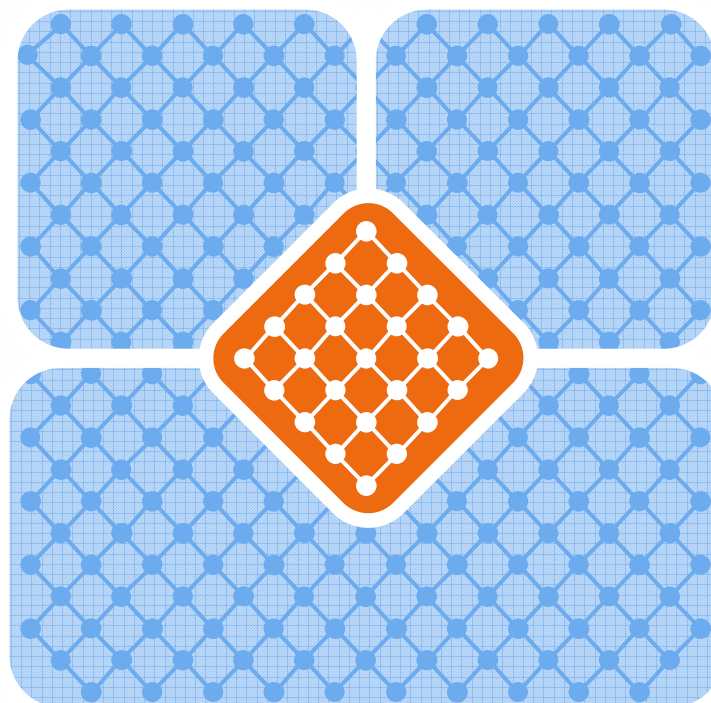
# The Endeca Information Access Platform

## Data-driven App Components

- Rapid development of rich apps
- Pre-packaged capabilities
- Automatically adapt to changes in data and content

## Information Transformation Layer

- Enriches information
- Unites disparate sources
- Maintains, augments, creates relationships



## Enterprise-class platform

Scalability, reliability, security

## Web-based Management Suite

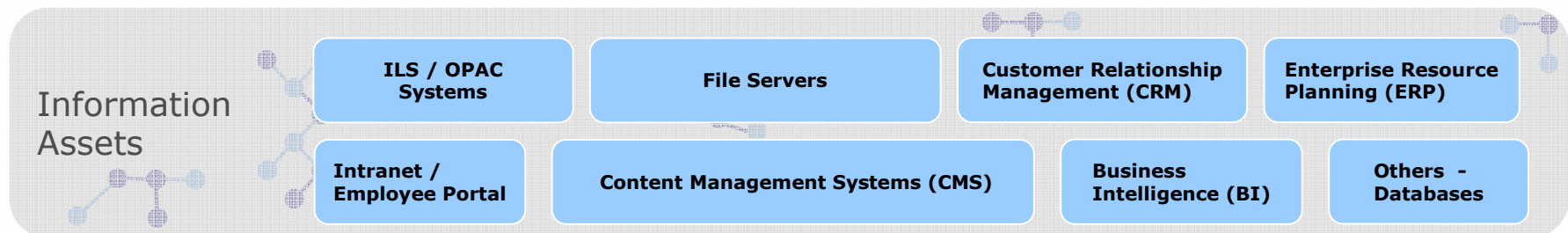
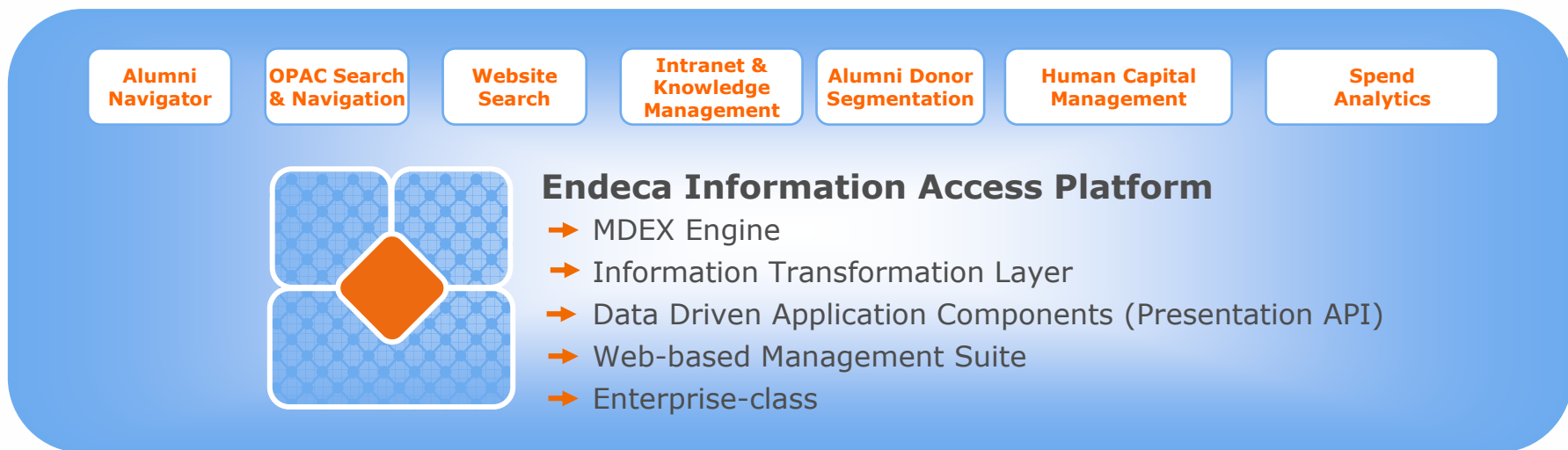
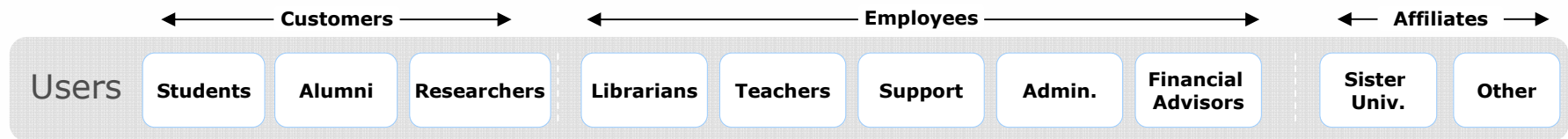
- Empowers managers
- Right information at right time
- Adaptive presentation rules

## MDEX Engine™

### Meta-relational architecture

- Adaptive user interfaces
- Reveals relationships
- Encourages exploration and discovery
- Guided Navigation® experience

# Adaptivity closes the Information Access Gap







Success Story  
North Carolina State University



## Did you know?

A typical library of 1MM books spends approximately \$20-30MM per year . . . .

- To purchase them
- To catalog them
- To maintain/bind them
- To shelve them
- On systems that manage their circulation
- On real estate & building maintenance to house them
- On annual purchases to augment collections

How do we get a return on that kind of investment?



## NCSU Objectives

- Increase usage of university library by students, faculty, and other members of the community
  - Number of items in circulation at any given time
- Increase re-circulation
  - better return on investment in collection
- Increase usage of legacy collection
  - Most recent always at the top of results (although maybe not most relevant)
- Increase % of Successful Searches
  - Combat perceived lack of coverage
- Better control over application, relevancy; more flexibility
- Ease of maintenance

## NCSU - Pursuit of Features

### Endeca

- Speed
- Relevance Ranking
- Faceted Browsing
- True Browsing (LC)
- Data-driven spell-checking
- Automatic stemming
- “Did you mean...”
- Hierarchical browsing
- Browsing in CONTEXT of search
- Scale & operational simplicity
- Ease of use

### Unicorn / Web2

- Speed?
- Last-in / First-out
- Authority index links
- Query required
- Dictionary lookup only
- No
- No
- No
- No
- No
- No
- No



## Implementation Resources

- One java-trained librarian (not a developer) working 30-40 hours per week for 14 weeks
- Worked with librarian from Digital Library Initiatives to do wireframing and fleshing out requirements (total of 40-60 hours)
- Project Management by Andrew Pace approximately 10 hours per week for 20 weeks
- Committee consisting of a cataloger for metadata issues and a reference librarian for interface issues – total of 2-4 hours per week over 12 weeks (combined)

# Pre-Endeca Catalog Search

**NCSU LIBRARIES**

- SEARCH THE COLLECTION
- BROWSE SUBJECTS
- SERVICES
- LIBRARY INFORMATION
- COMMUNITY
- NEWS & EVENTS

**MY LIBRARY:** Library Account | My Courses

- Most Used -

FAQ | Site Index

Search

**Search the Collection** [Get Answers Now](#)

**CATALOG**  
Books, ebooks, journals, movies and music, government documents, and more

**Search** [Advanced Search](#) [E-books](#) [Videos & DVDs](#) [New Titles](#) [Other Catalogs](#)

Please enter a word or phrase to search:

**Search by:**

- Author
- Title
- Journal Title
- Subject
- Series
- Keyword
- Keyword in Author
- Keyword in Title
- Keyword in Journal Title
- Keyword in Subject
- Call Number
- Gov't, Doc, Number
- ISBN
- ISSN

Optional Search Limits:

- Limit by Location -

**6 search tabs**  
**14 radio buttons**  
**1-4 drop down boxes**

**Sample search:**  
old man and the sea

**NCSU LIBRARIES** [Search the Collection](#) | [Browse Subjects](#) | [Services](#) | [Library Information](#) | [Community](#) | [News & Events](#)

# Endeca Catalog Search

**NCSU LIBRARIES**

- SEARCH THE COLLECTION
- BROWSE SUBJECTS
- SERVICES
- LIBRARY INFORMATION
- COMMUNITY
- NEWS & EVENTS

**MY LIBRARY:** Library Account | My Courses

- Most Used -      FAQ | Site Index      Search

**Search the Collection**

**CATALOG**  
Books, ebooks, journals, movies and music, government documents, and more

Search    Advanced Search    Browse

**Keyword Search for:**      **as search type:**

     Keyword Anywhere      Search

Examples: active learning  
"united states" revolution causes

**Or Begins With...**

     Title begins with...      Search

Examples: old man and the sea  
war and peace

**Hint**

- Search Other Catalogs
- Search Help

Guided Navigation by Endeca : Send us your comments

- 3 search tabs
- No radio buttons
- 2 search boxes
- Keyword search default

Catalog Search:  Keyword Anywhere  [Start Over](#)

Send search to:

Search 'deforestation':

We found 350 matching items. Limit results to [currently available items](#).

9. Availability

Browse By:

- C - Auxiliary Sciences of History (1)
- D - History (General) and History of Europe (5)
- F - America: local history (4)
- G - Geography, Anthropology, Recreation (38)
- H - Social sciences (55)
- J - Political Science (2)
- K - Law in general, Comparative and uniform law, Jurispruden ... (4)

- L - Education (1)
- P - Language and literature (4)
- Q - Science (42)
- R - Medicine (1)
- S - Agriculture (150)
- T - Technology (4)
- Z - Bibliography, Library Science, Information resources (ge ... (1)

10. Library of Congress Classification

Narrow Results By:

Subject: Topic

- Deforestation (190)
- Environmental aspects (69)
- Forests and forestry (59)
- Economic aspects (45)
- Rain forests (38)
- Show More ...

Subject: Genre

- Congresses (49)
- Case studies (11)
- Biography (5)
- Handbooks, manuals, etc (3)
- Bibliography (3)
- Show More ...

Format

- Book (308)
- eBook (30)
- Microfiche (14)
- Video cassette (8)
- CD-ROM (3)
- Show More ...

Library

- Online Resources (33)
- D.H. Hill (206)
- Natural Resources (140)
- Veterinary Medical (1)

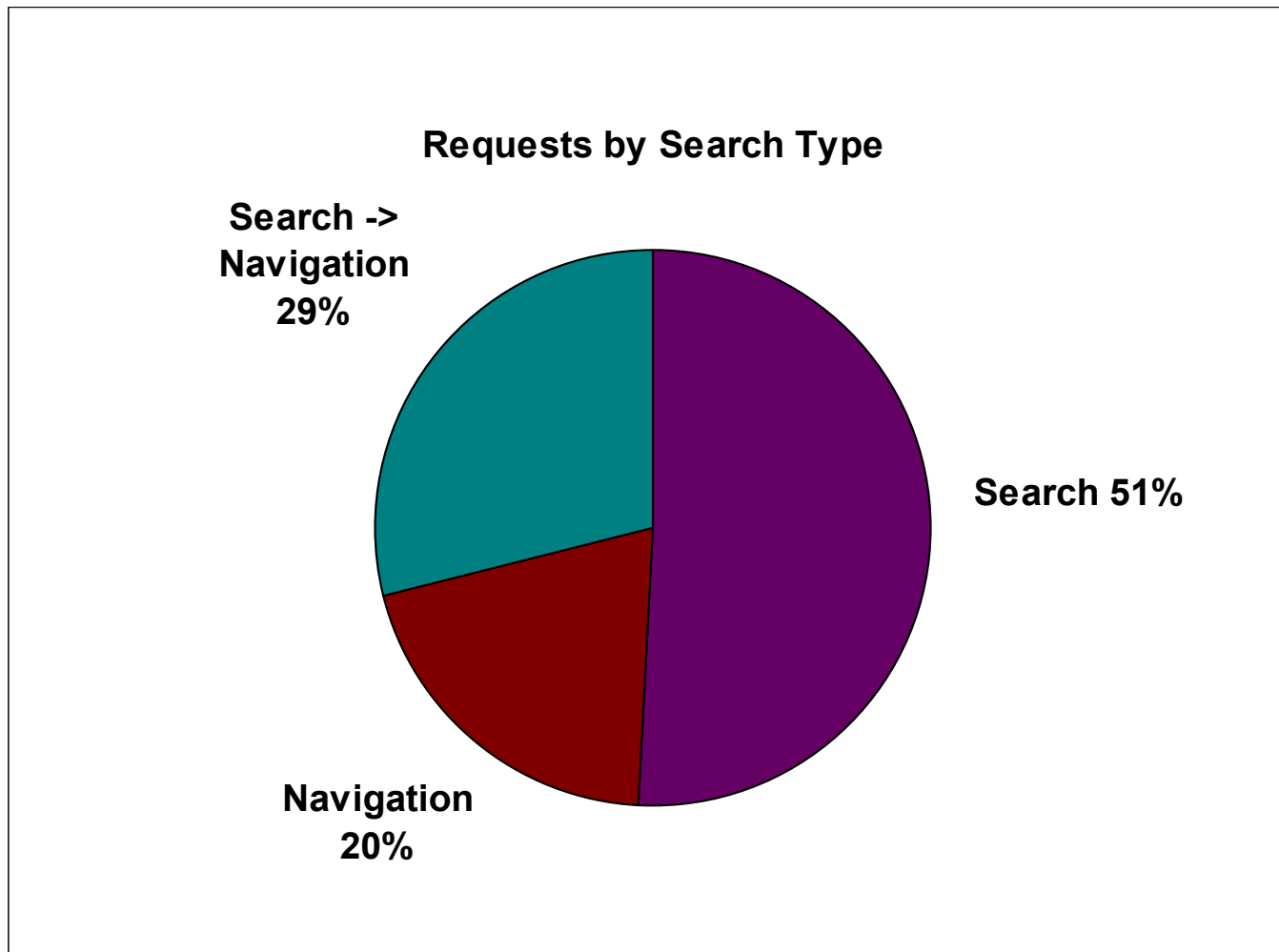
1. Subject: Topic
2. Subject: Genre
3. Format
4. Library
5. Subject: Region
6. Subject: Era
7. Language
8. Author

Sort By:

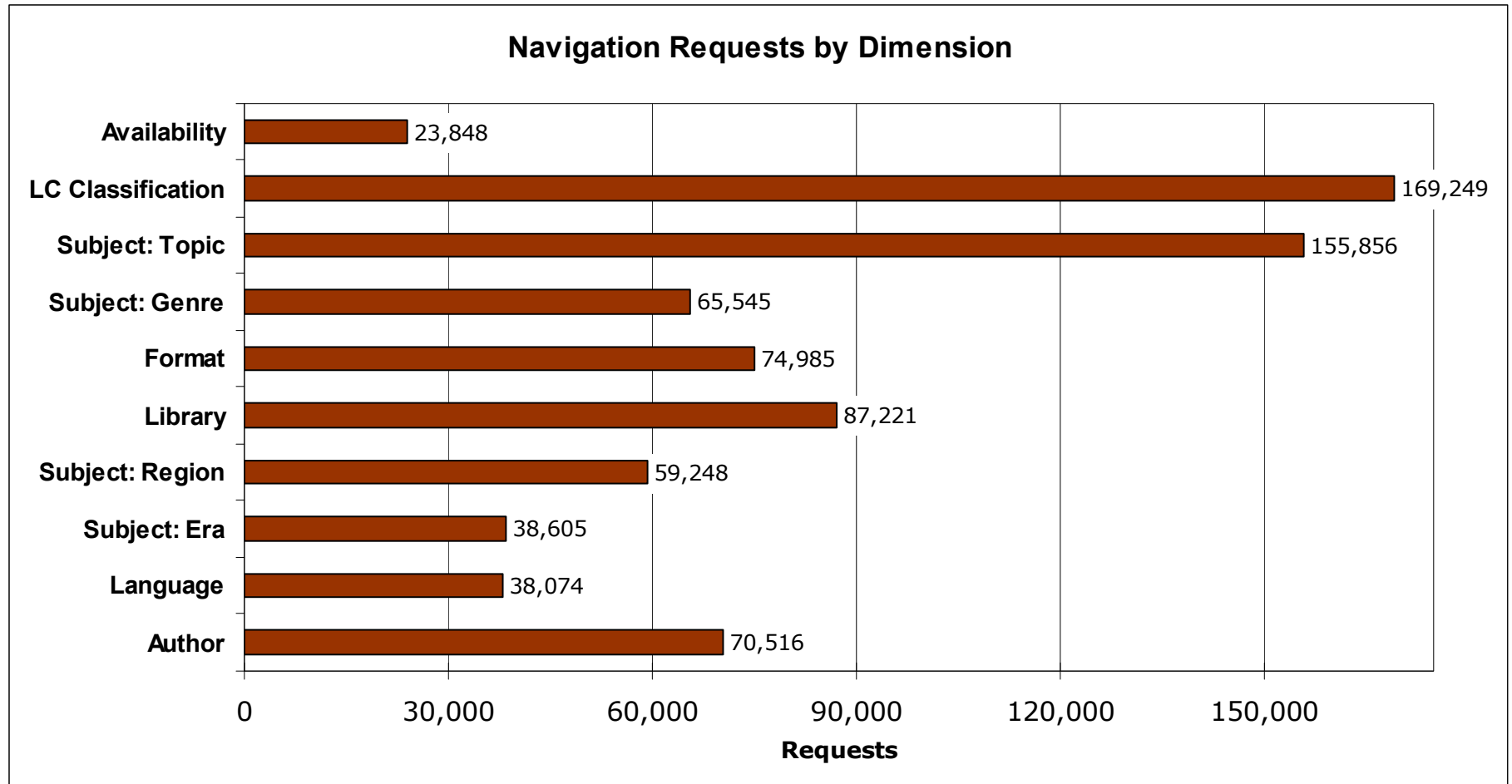
Item #	Title	Location	Status
1.	<a href="#">Amazon : dispelling the myths</a>	Stacks	Available
2.	<a href="#">Economic growth in the Brazilian Amazon</a>	Stacks	Checked Out
3.	<a href="#">Deforestation, environment, and sustainable development : a comparative analysis</a> <b>Published:</b> 2002. <b>Format:</b> Book <b>Natural Resources Library</b> SD418.3 .B6 D96 2002	Stacks	Checked Out
4.	<a href="#">The Causes of tropical deforestation : the economic and statistical analysis of factors giving rise to the loss of the tropical forests</a> <b>Published:</b> 1994. <b>Format:</b> Book <b>Natural Resources Library</b> SD418 .D43 2001	Stacks	Available



## Usage patterns

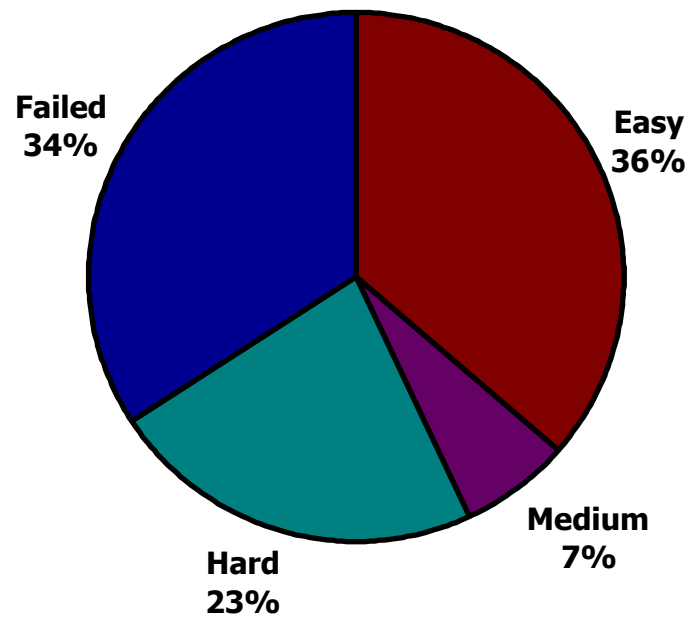


## Usage patterns, cont.

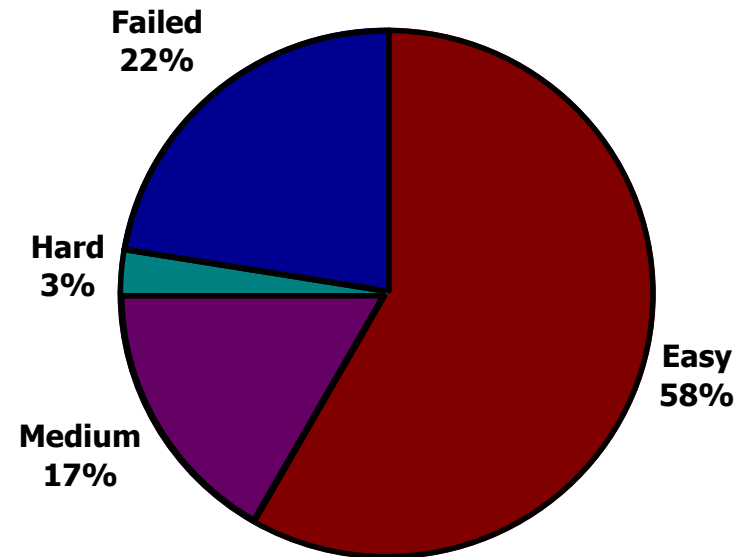


# Usability test results

## Topical Task Success: old catalog



## Topical Task Success: Endeca



## Some User Reaction

"This is absolutely the coolest thing I've seen all century."

- Will Owen, Head of Systems (UNC Libraries)

"Also, I'm really digging the new NCSU library catalog. Very nice."

- Educause staff (non-librarian)

"The new Endeca system is incredible. It would be difficult to exaggerate how much better it is than our old online card catalog (and therefore that of most other universities). I've found myself searching the catalog just for fun, whereas before it was a chore to find what I needed."

- NCSU Undergrad, Statistics

*And just a handful of librarian blog excerpts:*

"The best library catalog interface I have come across to date."

"It's brilliant — faceted browsing and relevance ranking really improve access. It makes the search experience closer to what users expect when searching on the web."

"NCSU libraries butcher the pig. Andrew Pace of the NCSU Libraries, who has said that making minor changes to library catalog systems is like putting lipstick on a pig, has unveiled a revolutionary new interface to their catalog."

## Future Plans

- Ongoing tweaks:
  - Continued usability testing
  - Relevance ranking algorithms & spell correction thresholds
  - Display fixes/enhancements
  - Additional browsing options
  
- Endeca 2.0 ideas
  - FRBR-ized display
  - Discussions with OCLC regarding FAST (Faceted Access to Subject Terms)
  - Patron-generated refinements
  - Build detail page in Endeca with live item data from Oracle
  - Shopping cart functionality for email/export of records
  - Enrich records with supplemental content – more usable TOCs, book reviews, etc.
  - The death of authority searching (?)



Questions?



Thank You

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