

# Incorporating Information Architecture Activities into the Redesign of the U.S. Census Bureau's Web Site

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The Usability Lab collaborated with representatives from across the U.S. Census Bureau to redesign Census.gov to better serve our users. We used card sorting to learn how users group and organize our information. This presentation describes our methodology, including how to create representative cards for a large data dissemination Web site, run the sessions, and analyze results. We discuss our recommendations and next steps which include lower level topic area card sorts and low-fidelity prototype testing.

## About the Speakers:

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# Incorporating Information Architecture Activities into the Re-design of the US Census Bureau's Web Site

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## There's more to usability engineering than testing...

Building usability  
into design:



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## Census Bureau Web site

Primary data source for our users

Data on nation's people, economy and businesses

- Difficult to navigate
- Full of confusing language/terms
- Time consuming/frustrating
- Users complain they can't find what they need

Can user-centered design (UCD) help?

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## Creating the card-sort terms

The image shows a screenshot of the U.S. Census Bureau website. At the top, the text "U.S. Census Bureau" is visible. Below it, a search bar contains the text "SEARCH: [ ] FAQs [ ] Census.gov [ ] Cheapest place to live [ ]". A callout box with the text "Cheapest place to live" points to the search input. The website layout includes a left sidebar with navigation links such as "New on the Site", "Data Tools", "American FactFinder", "Jobs@Census", "Catalog", "Publications", "Are You in a Survey?", "About the Bureau", "Regional Offices", "Doing Business with Us", and "Related Sites". The main content area features sections for "United States Census 2000", "People & Households", "Business & Industry", "Geography", and "Newsroom". On the right side, there are sections for "Data Find", "Population Clocks" (displaying "U.S. 300,000,000"), "Population Finder", and "Find An Area Profile with".

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## Card Sorting Example



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## Overview of Today's Presentation

### Introduction

- Brief synopsis on card sorting
- How we got started at Census
- Group dynamics

### Methods

- Create cards
  - Conduct call center interviews
  - Analyze web logs and visitor traffic
- Conduct open and closed card sorting

### Results, recommendations & what's next

Suggestions on how you can use these methods to improve site architecture

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## Card Sorting

Starting point

Learn user mental models

- Groupings
- Labels

Cluster analysis yields

- Hierarchy of concepts
- Labeling terms

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## Card Sorting (continued)

Used to construct navigation

- Structure
- Links
- Search engine terms

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## Card Sorting on Census.gov

### Methods—

- Form team
- Identify users
- Create cards
- Conduct Round 1—open sort
- Analyze results and modified cards
- Conduct Round 2—closed sort
- Analyze results
- Make recommendations

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## Getting Started: Forming the Team

### Information Architecture and Design Working Group (our Census Team)

- 15 member team
- Diverse personnel from throughout Census Bureau
- Team effort fostered
  - Thought and discussion among members
  - A user-centered perspective
- Usability Lab is small and this project is big—requires more people than lab can provide

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## Identify Users

### Typical user characteristics

- General or novice users of Census.gov and Census Bureau terminology
- Not too familiar with Census.gov
- Computer literate/savvy
- Comfortable searching for information on the Internet

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## Creating the Cards

### Background

- We had results from card-sorting study conducted over a year ago
- We wanted to build on the results and improve on the study
  - Card labels not representative of what users say or think about our content
  - Web content diverse and some topic areas not covered

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## Creating the Cards (continued)

Terms needed to be representative of our data/Web site

Limited to 100 terms

- Cognitive burden
- Software limitations

Team developed a two pronged approach to come up with card labels

1. Interview call centers and regional staff
2. Review top search terms/user queries

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## Interviews with Call Centers

What are the call centers/regional offices?

- People who take user calls at the Census Bureau (e.g., how many people live in my neighborhood?)
- Representative of different subject areas throughout the Census Bureau

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## Conduct Interviews with Call Centers

### How we prepared for call center interviews

- Created the call center survey questions (see handout)
- Worked with team members on how to conduct interviews
  - Teams of two meet with individual call center staff
  - Use probes and questions as stepping-off points (see handout)
  - Listen as the call center staff talk and “un-translat” user terms
  - Give follow-up questionnaire (see handout)

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## After the Call Center Interviews

### The two-person teams

- Write up notes on terms and user questions
- Summarize the terms that call center staff hear most often
- Post results to group

### We merge and massage terms

- Group together similar terms (e.g., gay/homosexual/ lesbian, rural/urban/suburban, city/cities),
- Remove and note duplicates
- Remove terms used in the card-sorting study from a year ago

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## Call Center Interviews

### Begin to cull the list of user-derived terms

- Selected 50 terms from available 400 (each team member)
- Decided we didn't have enough economic representation (as a team)
- Conducted 4 more call center interviews (two-person teams)
- Added in 105 more economic oriented terms (whole team to review)
- Used project management ranking methodology to add in extra econ terms
  - $N + 1$  over three
  - $N$  = number of terms needed

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## Top Search Terms

### Three different search tools on Census.gov

- Google
- Ask Dr. Census
- FAQ/Right Now

### Listed out the top search terms and compared them with the call center terms

- Terms in both locations automatically went on the list

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## Finalizing the terms

After comparing search lists and call center lists:

- Filled out final 100 terms by top terms Census team members had agreed on
- Four team member reviewed the final list of terms—added in context to terms, (e.g., time, geography)
- Terms were ready to go!

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## Make the physical cards

100 terms representative of Census.gov but user-centered

- High level terms
- Detailed terms
- New terminology

Typed in 18-point font

Placed onto 3-by-5 card stock

Number code on back of card

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## Open Card Sort

Goal: Understand how users group terms and the high-level category labels they use

Recruited 14 users from our recruits database

Census team members worked with users

- Sort cards into groups
- Label groups

Census team members

- Debriefed users
- Took notes
- Entered data into IBM's EZ-Sort tool

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## Card Sorting Example



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## Analyze Card Sort Data

List out user-given high and sub-category labels

Group similar terms

Identify number of times high-level category label used across users

Review cluster analysis for terms that were highly correlated

Review user comments about specific terms

Review outliers

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## High-Level Term Example: Economics

Terms	Number of Users
Economic Census	2
Economic Indicators	1
Economics	1
Gen. Economic Statistics	1
Economic Status	1
Economic Data	2
Economics	1
Spending	1
Economy	1

a) Economic Indicators or b) Economy

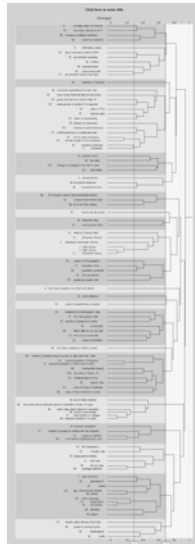
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# Cluster Analysis Output

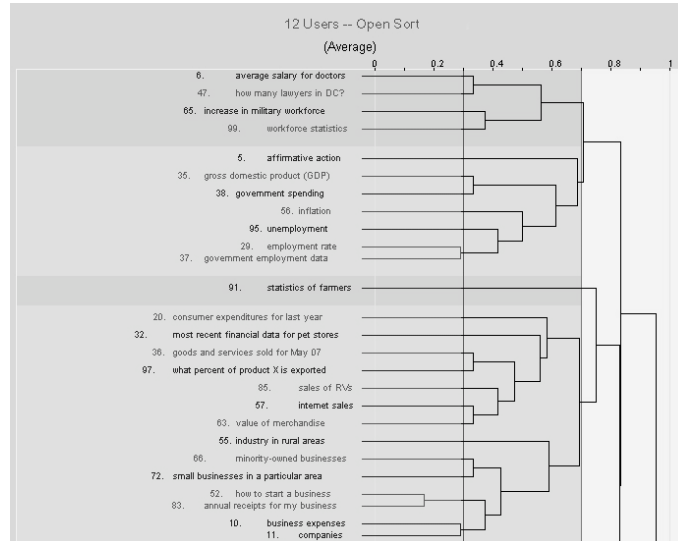
## Three variations on the cluster analysis

- Average, complete, simple (three different algorithms)
- It takes some interpretation to come up with the high-level terms
- Cluster analysis does not give the high-level terms
- Cluster analysis informs or guides the team, but it does not give ready "answers"

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## Card Sort Results

### Content

- Organized by subject
- Grouped into primary categories
- Some terms / concepts should go in more than one category

### Terminology

- Users had problems with a few jargon terms
- Not nearly as many “jargon” terms as found in study from a year ago

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## High Level Terms → Team Troubles

Group met and came up with list of 10 high level terms

The process was problematic

- Only 4 of the 9 “analysis” members were available to participate
- Cluster analysis was not used to its fullest
- Team members were self-censoring (i.e., “this term wouldn’t fly here,” “they would never approve it,” “that’s not how we do things here”)
- We were rushing to meet self-imposed deadline

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## Unsatisfactory Results

10 high-level terms were problematic

- Some terms / concepts replicated current Web site
- Some jargon terminology was in the list of 10
- No “buy-in” from team

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### Initial Recommendation: 10 High Level Terms

1. a) Economic Indicators <b>or</b> b) Economy	6. Income and Poverty
2. a) Humanity: People and Households <b>or</b> b) Population: People and Households	7. a) U.S. Regional, State, and Community Maps and Data <b>or</b> b) Maps & Geographic Areas (regions, states, neighborhoods)
3. U.S. Federal, State and Local Government	8. Housing
4. U.S. Business and Industry	9. Census, Surveys and Programs
5. Employment/ Unemployment	10. Education

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### High-level Terms -- Revisited

Census team met again – all 9 “analysts” required to attend

Instead of going forward with closed sort, we discussed problems with current list

- We had slipped back into “Census Speak”
- Used some labels that might be too broad or not representative of what our users said (esp. for population area)
- Were limiting ourselves to thinking of the Census.gov Web site instead of simply what did the cluster analysis show

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## High-level Terms -- Revisited

With a list of 10 terms that might be “Census speak” we had to re-evaluate

- We took a step back
- Asked for an outside expert opinion
  - Someone who had worked with card sorting and cluster analysis before
  - Someone who wasn't in the group
- New view helped us in our next meeting
- We reviewed the clusters, the input from the expert and identified 16 high-level terms
  - Had core group of 9 analysts present
  - Talked about not censoring ourselves to really go outside what our departments/programs wanted to see

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### Revised Recommendation: High Level Terms

1. a) Economic Indicators <u>or</u> b) Economy	9. Poverty
2. Business	10. Society and Culture
3. Retail Sales	11. Population Numbers
4. Real Estate	12. Health
5. Your Money	13. Census and Surveys
6. Neighborhoods and Communities	14. More about your questionnaires
7. Occupations and Employment	15. Geographic areas (regions, states, cities)
8. Voting and Politics	16. Education

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## Lessons Learned

Incorporate at the beginning the card sort terms / ideas from original study

- Would save time
- Would not have to “back fill”

Get depth and breadth of call center interviews first time round

- Get more complete coverage first go round instead of adding in areas at the end
- Make sure sample of call centers is diverse

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## Lessons Learned

Analysis of data is hard

- Get outside expert to review if possible
- Remind team what goal is for analysis
  - Forget who you work for—in this instance you don't work for the agency
  - Go outside the box, innovate,
  - Find patterns, categories that are “user-defined” not “agency defined”
- Have entire team meet when finalizing terms for next round

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## Lessons Learned

Acknowledge up-front / throughout the process that change is:

- Hard (people want to do things the way they always have done them)
- Can sometimes be painful (ideologically)

User-centered design techniques can be passed on to team members

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## Card Sorting Continues

With exceedingly large web sites—is sorting 100 terms enough? Is 200?

Sub-topic card sorting

- By subject
  - 50 + Employment terms
  - 50 + Poverty terms
  - 50 + Health terms
  - Run each with open sort & validate with closed sort

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## Low-Fidelity Prototype Testing

Create low-fidelity prototype templates of revised Census.gov Web site pages

Recruit users to evaluate and refine prototypes

Conduct iterative usability studies on prototypes

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## Use Card-Sorting in *Your* Next Redesign

Card sorting useful when attempting to organize information rich Web site

- Organize content from users' perspective
- Identify confusing terms
- Use as a starting point—before low-fidelity prototypes
- Get useful data from users which can feed into design
- Get buy-in from content providers by using similar data from users

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## Call Center Survey Questions

Developed by the Information Architecture and Design Working Group (IADWG), March 2007

1. What specific items are people most often asking about?  
    Prompt a. What questions do your callers ask you about most?  
    Prompt b. What specific questions are they asking about right now compared to last month?
2. What topics come to mind that you are asked, but that you have to transfer to another part of Census Bureau or another federal agency?
3. What types of data do your callers want?  
    How do they describe what they are asking for?
4. What specific tasks do they want to do?  
    How do they describe what they are asking for?
5. What geographic areas are they searching for data? (Cities, states, counties, msa's...)  
    How do they describe what they are asking for?
6. For what time periods are callers asking for data? (most recently, historical, a specific year?)
7. What Census Bureau terms and concepts do most callers have trouble understanding?
8. Which Census language do you think is most removed from the way people normally ask for information?

## **Pre-letter to send to lead contact on getting information on user calls**

Greetings ---

I met with a number of your staff members last Wednesday to talk about Census.gov users and the types of questions they have when they call and speak to your staff members. We are particularly interested in knowing the words they use when asking their questions. It was a great meeting and we really appreciated their time. We are on a team that is charged with getting the Census.gov Web site more user-centered. As such we first want to learn more about what the users are asking for.

As we talked we all thought it might be easier to answer our questions if your staff members could jot a note of what the person was calling about in the moment they received the phone call---using the exact wording the telephone caller used rather than any "translation" the Census staff member might need to make in their head in order to answer the question. Basically we are interested in knowing the terms that users use when asking for our information, before the "translation" occurs.

A good example that came up in discussion was that people usually asked for information on "companies" rather than on what we think of as "establishments." Another example was that people might use the phrase "as far back as we can go" for what census thinks of as "historical" or "time series" information. Another example was that people ask for "home owners" or information on "renters" rather than asking about "tenure."

To help this exercise along I've included a few questions---not that all have to be answered but rather as a way to get people thinking. If it is possible for your staff members to try to make a note of the terminology that they are hearing and then to pass this information along to us, that would be a great help. Let me know if you have any questions about this.

Many thanks,

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### **Questions on data calls**

1. What specific items/terms/information are your callers asking about?
2. What data/information do your callers want?
  - i. How do they describe what they are asking for?
  - ii. What are the words they use?
3. What specific tasks do your callers want to do?
  - i. How do they describe what they are asking for?
4. What topics do your callers ask you about, but that you have to transfer to another part of Census Bureau or another federal agency?
5. What geographic areas are your callers asking about? (Cities, states, counties, msa's...)
  - i. How do they describe what they are asking for?
6. For what time periods are callers interested in?
7. What terms and concepts do callers have trouble understanding?