

# Providing Your Users With An Effective Search Page

## A Case Study



Louis Drummond  
Specialist, Congressional Research Service



Scott McDaniel  
Senior Interaction Designer, Cognetics Corporation

# The Starting Point

The screenshot shows the LIS Bill Summary & Status Basic Search interface. At the top, there is a navigation bar with the LIS logo, the title "Bill Summary & Status Basic Search", and buttons for "HOME", "FEEDBACK", and "HELP". Below this is a row of buttons for years from 107 to 93, with 107 selected. To the right are buttons for "Advanced Search" and "Multi-Congress Search".

The main search area is titled "Search for" and includes three checked options: "Public Bills", "Amendments", and "Private Bills". Below this are three search criteria sections, each with a "Search" and "Clear all" button:

- Bill/Amdt/Public Law Numbers (one or more):** [ Help ]  
Examples: *hr5, s. 435, H.R. 842, hjres 121, sa213, pl107-5*  
[ Input field ]
- Word/Phrase:** [ Help ] [ Searches bill summaries, titles, etc. -- not full text. ]  
Automatic singular/plural  On  Off Or use \* for word endings  
Examples: *antiterrorism, endowment\*, death penalty, gas\* tax\**  
[ Input field ]
- Sponsor/Cosponsor:** [ Help ]  
 Sponsor  Cosponsor  Sponsor/Cosponsor  
Senate: Akaka, Daniel K. [HI], Allard, Wayne [CO], Allen, George [VA]  
House: Abercrombie, Neil [HI-1], Acevedo-Vila, Anibal [PR], Ackerman, Gary L. [NY-5]

Below the Sponsor/Cosponsor section is a "Committee/Subcommittee" section with a "Search" and "Clear all" button. The dropdown menu is open, showing "Senate" and "Aging", "Agriculture, Nutrition, and Forestry".

A tip on the right side of the page reads: "Tip: Click in a box and type a letter to jump down the alphabet."



# Congressional Research Service (CRS) Issues

---

- How to convey that different parts of a page combine?
- Different search interfaces for congressional staff, analysts, and information professionals?
- Two pages (basic, advanced) or one?
- How many search buttons, and where?
- How many lines in a scrolling list?
- How to explain Clear vs. Clear All?



# User-Centered Design Process

---

- Start with user research
- Design based on observations
- Develop testable prototype
- Test and revise, test and revise, etc.
- Lock down and develop



- Summer 2002
- Purpose: Find out how congressional staff use Bill search pages to help us redesign them.
- 19 interviews
  - ◆ volunteers from our LIS-TIPS listserv
  - ◆ 8 House, 6 Senate, 5 CRS
  - ◆ 10 months to 27 years on the job
  - ◆ variety of offices and job types



# Contextual Interview Questions

---

## Sample questions:

- Show me how you use the bill search pages.
- Show me the most complex search you've ever done.
- Show me how you use the links at the bottom of the page.
- What is easy and hard about using these search pages?



# Contextual Interview Findings

---

- Big difference between what users said and what they did
- Confused by basic vs. advanced search pages
- Confused by metadata vs. full text databases
- Did not use Browse features



## ■ Goals and Scope

- ◆ Redesign bill search
- ◆ Redesign query screens only, not results
- ◆ Could not combine metadata and full text
- ◆ Changes could not result in new coding

## ■ Approach

- ◆ Definition of vision – why this and why now?
- ◆ Derive requirements from personas and scenarios
- ◆ 3 iterations with progressively more detailed prototypes





- Personas are user models
  - ◆ Created from user research
  - ◆ A composite person, completely stereotypical
  - ◆ Personalizes “the user”
  - ◆ 2-5 per UI, 1 is primary
- Scenarios are task models
  - ◆ Shows how persona completes tasks to achieve a goal
  - ◆ 3-5 per persona

- **Sen. Committee Majority Policy Director for Health**
  - ◆ 14 years experience on the Hill
  - ◆ B.S. in Political Science, M.A. in Public Policy
  - ◆ Tracks health related legislation
  - ◆ Helps draft new legislation
  - ◆ Enforces committee jurisdiction
  
- **Search Characteristics**
  - ◆ SME in legislative procedure
  - ◆ Advanced intermediate searcher
  - ◆ Precision and recall searches



## ■ Scenario 1: Search for Titles and Text

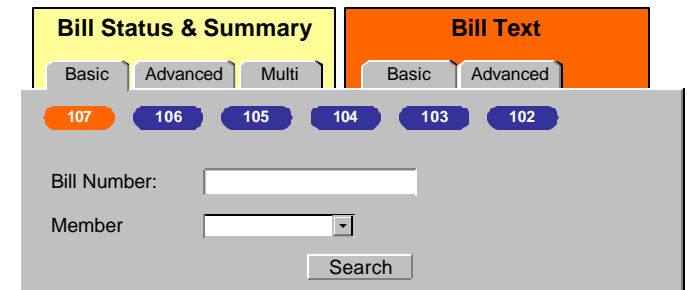
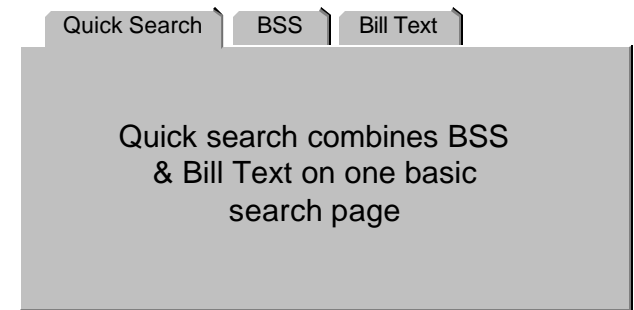
It's the beginning of the session and Stephanie needs to see which bills have been introduced before on Medicare related to prescription drug benefits. She is helping to draft legislation and wants to give Members appropriate wording from previous bills. Stephanie must also come up with a good title for the bill. She must search for all related titles to be certain that she doesn't reproduce one.



- Generated requirements from scenarios - informal
- Requirements included:
  - ◆ Find phrases inside bills
  - ◆ Find bills from previous Congresses
  - ◆ Find bills sponsored/cosponsored by any Member
  - ◆ Find bills with a given status
  - ◆ Find bills pertaining to specific topics or committees
  - ◆ Find bills by number
  - ◆ Track bills through the legislative process
  - ◆ Any combination of the above

# Preliminary Design

- Team created and debated several early concepts
- Team selected one concept to test
- Created a “paper prototype” for that concept



# First Iteration: Quick Search



## Bill Search

QuickSearch

Advanced

Multi-Congress

Full Bill Text

Browse

108th Congress (2003-2004)

Search

Clear Form

Fill out any or all of the fields below. Press the **Clear Form** button to start a new search.



108

107

106

105

104

103

102

101

100

99

98

97

96

95

Bill/Law Number:

[Browse Bills & Amendments](#), [Browse Public Laws](#)

Examples: hr5, s. 435, H.R. 842, hjres 121, sa213, pl107-5

Enter Words from  
Title/Summary:

Examples: antiterrorism, endowment\*, death penalty, gas\* tax\*

Choose one of these  
popular topics:

Senate Sponsor:

Senate Committee:

House Sponsor:

House Committee:

Major Action:

- All    Reported Senate    Reported House    Law  
 Passed Senate    Passed House

Search

Clear Form



# First Iteration: Advanced Search

**Bill Search**

QuickSearch | **Advanced** | Multi-Congress | Full Bill Text | Browse

**108th Congress (2003-2004) - Bill Status & Summary** Search Clear Form

Fill out any or all of the fields below. Press the Clear Form button to start a new search.

**108** **Bill, Amendment, or Public Law Numbers (one or more)**

Numbers:  [Browse Bills & Amendments](#), [Browse Public Laws](#), [Browse Private Laws](#)

Examples: hr5, s. 435, H.R. 942, hres 121, hr213, pl075

**107** **Words From Title, Summary, or Subject (not Full Bill Text)**

Words:  in  [Scope Dates](#), [Browse Popular & Short Titles](#)

Note: this should be a scrollable box, 5 lines tall by 30 characters wide.  Automatic singular/plural. Note: To search the full text of bills, go to the [Full Bill Text](#) tab.

Note: To construct complex searches, see the list of [connectors](#) and [field specifiers](#).

Examples:  
 "coastal zone management act" finds the exact phrase.  
 campaign AND (finance OR fund) finds campaigns with either finance or any word starting with find.  
 status=referred prev? house committee? finds the word referred within 2 words of "house committee". [Tip on status searches.](#)

Choose one of these popular topics:

**106** **Bill Type**

S.  H.R.  Bills Only  
 S.J. Res.  H.J. Res.  Senate Only  
 S. Con. Res.  H. Con. Res.  House Only  
 S. Res.  H. Res.  H.R.S. Only  
 S. Amdt.  H. Amdt.  Check All  Uncheck All

Public and Private Bills  
 Public Bills Only  
 Private Bills Only

**105** **Sponsors and Cosponsors**

Senators:  Representatives:  [Browse by Senator/Cosponsor](#)

Aardark, Arthur [VR] Aardark, Arthur [VR]  Sponsor Only  
 Baskerville, Hound [TL] Baskerville, Hound [TL]  Cosponsor Only  
 Coyote, Wiley E. [JV] Coyote, Wiley E. [JV]  Sponsor or Cosponsor  
 Dodgers, Duck [LU] Dodgers, Duck [LU]  
 Sen, Chihiro [MZ] Sen, Chihiro [MZ]

Tip: Click in a box and then press the first letter of a sponsor's name repeatedly.  
 Tip: To select up to 20 members, hold down the CTRL key while clicking more names.

Combine multiple selections with OR  Combine multiple selections with AND

Sponsored/Cosponsored by Members from a state delegation:

Senate sponsors:  Any State House sponsors:  Any State  
 Senate cosponsors:  Any State House cosponsors:  Any State

**Committees and Subcommittees**

Senate Committees:

Aging  
 Agriculture, Nutrition, and Forestry  
 Appropriations  
 - Defense  Referred  
 - Transportation  Originated

House Committees:

Administration  Reported  
 Agriculture  Discharged  
 - Conservation, Credit, Rural Development and Research  
 - Department Operations, Oversight, Nutrition, and Forestry  Legislative Interest  
 Aviation

Tip: Click in a box and then press the first letter of the committee's name repeatedly.  
 Tip: To select up to 20 committees, hold down the CTRL key while clicking more selections.  
 Note: Includes only committees and subcommittees with legislation this Congress.

Combine multiple selections with OR  Combine multiple selections with AND

**Major Action (Bills and Amendments)**

Major Actions:

Any Stage  
 BILLS AND RESOLUTIONS ACTIONS  
 Introduced/originated in House  
 Referred to House committee  
 Referred to House subcommittee

[Browse Major Actions on All Bills & Amendments](#)  
[Browse by Date of Major Action](#)  
[Browse Public Laws](#)  
[Browse Private Laws](#)  
[Browse Vetoes/Res.](#)

Tip: Click in a box and then press the first letter of a stage's name repeatedly.  
 Tip: To select up to 20 stages, hold down the CTRL key while clicking more selections.  
 Note: Includes only major actions that have occurred this Congress.

Combine multiple selections with OR  Combine multiple selections with AND

**Date of Introduction**

Date:  mm/dd/yyyy through

If you specify a range of time greater than 3 months, you must also enter a search value for one of these sections:

- Words From Title, Summary, or Subject
- Sponsors and Cosponsors
- Committees and Subcommittees
- Major Action (Bills and Amendments)

Sort By:  Bills/Amdt# Show Query:  No Search Clear Form



- Tested paper prototype
- Asked congressional staffers using Senate Library and House Research Center to help evaluate screens
- Used cutout screen to simulate scrolling
- Used scenarios to create test questions
  
- 11 total (3 CRS, 4 House, 4 Senate)
  - ◆ CRS: 2 novice and 1 expert
  - ◆ House: 2 novice and 2 expert
  - ◆ Senate: 3 novice and 1 expert





# Sample Questions from First Usability Test

---

- How far back can you search?
- Find all bills for which Senator Daschle and Senator Lott are both cosponsors.
- Find all the Public Laws from this Congress.
- Find a list of Popular and Short Titles for all the bills in this Congress.
- Your boss needs to know which bills introduced this Congress have the phrase "incremental loss" included anywhere in the bill.



# Results of First Usability Test

---

- Many did not realize that metadata pages do not search Full Text
- Some had trouble with initial navigation, finding tabs (but once found, navigation went smoothly)
- Most were able to find the browse links




# Second Design Iteration

---

- **Problem: Break in users' mental model**
  - ◆ Them: no distinction of metadata and full text
  - ◆ Us: technical constraints forced separate search pages
- **Fix: Guide users to appropriate page**
  - ◆ Placed several cues on the metadata search pages to lead users to full text
  - ◆ Re-labeled items and made other adjustments, e.g. word search box vs. Topics list
  - ◆ Changed titles of pages to specifically say Bill Summary & Status or Full Bill Text



# Second Iteration: Quick Search



## Bill Search

[Contact Us](#)

Quick Advanced Multi-Congress Full Bill Text Browse

108th **108th Congress (2002-2003): Bill Summary & Status**

107th

106th

105th

104th

103rd

102nd

101st

100th

99th

98th

97th

96th

95th

94th

93rd

Fill out any or all of the fields below. Press the *Clear Form* button to start a new search. [?](#)

Bill/Law Number:  [Browse Bills & Amendments](#), [Browse Public Laws](#)  
Examples: hr5, s, 435, H.R., 842, hjres 121, sa213, pl107-5

Enter Words from Title/Summary:   
Examples: antiterrorism, endowment\*, death penalty, gas\* tax\*.  
Note: To search for a word or phrase in the full text of bills, use the [Full Bill Text](#) tab.

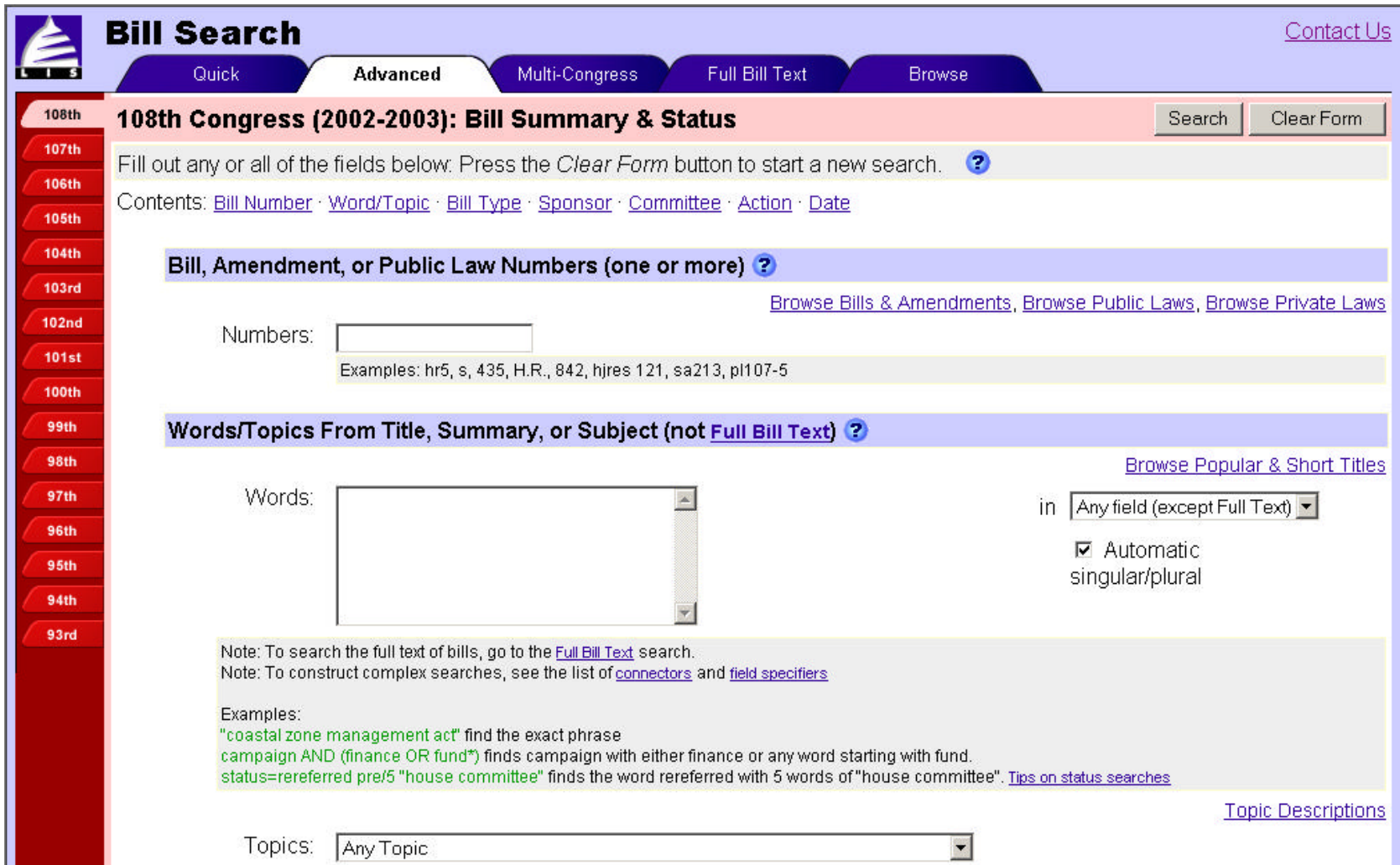
Choose a topic:

Senate:    
House:

Action:  All  Senate Floor  Passed Senate  House Floor  Passed House  Law



# Second Iteration: Advanced Search



**Bill Search** [Contact Us](#)

Quick **Advanced** Multi-Congress Full Bill Text Browse

108th **108th Congress (2002-2003): Bill Summary & Status** Search Clear Form

107th Fill out any or all of the fields below. Press the *Clear Form* button to start a new search. ?

106th Contents: [Bill Number](#) · [Word/Topic](#) · [Bill Type](#) · [Sponsor](#) · [Committee](#) · [Action](#) · [Date](#)

105th

104th **Bill, Amendment, or Public Law Numbers (one or more) ?**

103rd [Browse Bills & Amendments](#), [Browse Public Laws](#), [Browse Private Laws](#)

102nd Numbers:

101st Examples: hr5, s, 435, H.R., 842, hjres 121, sa213, pl107-5

100th

99th **Words/Topics From Title, Summary, or Subject (not Full Bill Text) ?**

98th [Browse Popular & Short Titles](#)

97th Words:

96th in

95th  Automatic singular/plural

94th

93rd

Note: To search the full text of bills, go to the [Full Bill Text](#) search.  
Note: To construct complex searches, see the list of [connectors](#) and [field specifiers](#)

Examples:  
"coastal zone management act" find the exact phrase  
campaign AND (finance OR fund\*) finds campaign with either finance or any word starting with fund.  
status=rereferred pre/5 "house committee" finds the word rereferred with 5 words of "house committee". [Tips on status searches](#)

[Topic Descriptions](#)

Topics:



# Second Usability Test

---

- HTML prototype
- Repeated questions from the first usability test
- Added question: Can you find help on this page?
  
- 8 total (4 CRS, 4 House)
  - ◆ CRS: 2 expert and 2 novice
  - ◆ House: 2 expert and 2 novice



# Results of Second Usability Test

---

- No problems with navigation, tabs, etc.
- Users still confused about metadata and full text searches
  - ◆ But this time most recovered before clicking search
- Users did not find Browse links
  - ◆ Opposite results from Usability Test 1
- Users did not find the online help
- Some negative reaction to the colors and graphics



# Third Design Iteration


---

- Changed “Browse” to “View Lists”
- Dropped the online help icon and replaced it with a text link titled “Help”
- Changed colors and graphics





# Third Iteration: Quick Search



## Bills

[Contact Us](#)

**Quick**   **Advanced**   **Multi-Congress**   **Full Bill Text**   **Lists**

**108**   **Bill Summary & Status Quick Search: 108th Congress (2003-2004)**     

**107**   Fill out any or all of the fields below, then press *Search*. Press *Clear Form* to start a new search. [Help](#)

**106**

**105**   Bill/Law Numbers:    View List of: [Hot Bills](#), [Bills/Amendments](#), [Public Laws](#)

**104**   Examples: hr5, s. 435, H.R. 842, hjres 121, sa213, pl108-5

**103**   Words from Title, Summary, Subject (not [Full Bill Text](#)):

**102**   Examples: terror\*, "coastal zone", campaign and (finance or fund\*), elementary pre/3 education.

**101**   Note: To search for a word or phrase in the full text of bills, use [Full Bill Text](#).

**100**   Topic Selection:  ▾

**99**

**98**   Senate Member:    Spon    Cosp    Both   House Member:  ▾

**97**    ▾

**96**   Senate Committee:  ▾   House Committee:  ▾

**95**

**94**

**93**   Action:    Introduced    Passed Senate    Passed House    Passed Both    Public Law



- Shorter test; repeated only questions that were problems from the second usability test
- 3 total (all from CRS)
  - ◆ 1 expert and 2 novice
- Results:
  - ◆ Users were able to distinguish metadata and full text
  - ◆ Users could find the help links
  - ◆ Users understood and made use of the Lists pages



# Contextual Interview Issues Addressed by Final Design

---

- Users distinguished the basic and advanced search pages
- Users *better* understood the need to use one page for metadata and another for full text
- Users found the navigational features between search pages and between Congresses
- Users found and used the Browse features
- Users understood the various parts of the page combined with a Boolean AND



- Locked down the design
- Developed the pages (HTML and programming)
- Adjusted the LIS home page to account for the new search page designs
- Provided a preview of the new page design for comments in December
- Brought up new pages on second day of the 108<sup>th</sup> Congress, January 8, 2003



# Lessons Learned from Case Study

---

- Search is more than just a box on a home page
- Need research on complex search page design
- Technical constraint vs. user assumptions
- What users say vs. what they do
- Personas are good



- Koyani, S. and Bailey, R. **Searching vs. Linking on the Web: A Summary of the Research.** Communication Technologies Branch, National Cancer Institute, 2002.  
<http://usability.gov/searchlinkfinal1.pdf>
- McDaniel, S. and McDaniel, M. **The Big Dig: Mining Nuggets of Value.** In *User Experience*, Summer 2002, pages 20-29.  
<http://www.cognetics.com/papers/others/index.html>

Many useful references are at the end of these two documents.

# About CRS and LIS

## ■ Congressional Research Service (CRS):

- ◆ Part of the Library of Congress
- ◆ Works only for Congress
- ◆ Provides timely, objective and non-partisan research, analysis, and information services

## ■ Legislative Information System (LIS):

- ◆ Access to several specialized databases
  - Bill Summary and Status                      Bill Text
  - Congressional Record                              Committee Reports
- ◆ Available only to the House, Senate, and legislative support agencies
- ◆ Public users have access to THOMAS ([thomas.loc.gov](http://thomas.loc.gov))

## ■ LIS Team:

- ◆ Four staff members from CRS, all with background in librarianship
- ◆ Manage all aspects of LIS design, development, testing, maintenance
- ◆ No separate usability staff– responsible for both design and user testing
- ◆ Work with eight programmers from the Library to implement search, display, and interface features using InQuery search engine
- ◆ Provide training, telephone support, and email support for congressional users

◆ **Louis Drummond**  
◆ **202-707-2482**  
◆ **[LDrummond@crs.loc.gov](mailto:LDrummond@crs.loc.gov)**



# About Cognetics

- We bring a complete, real-world perspective and an award-winning design team to creating information and knowledge management tools.
  - ◆ User-centered interface design
  - ◆ Evaluation and testing
  - ◆ Consulting and methodology
  - ◆ Staff coaching and development
- Our approach creates design that goes beyond surface aesthetics
  - ◆ Understand the user's perspective and work flow
  - ◆ Simplify where possible
  - ◆ Work with the technology
  - ◆ Execute rapidly, test frequently, manage tightly

- ◆ [info@cognetics.com](mailto:info@cognetics.com)
- ◆ [www.cognetics.com](http://www.cognetics.com)
- ◆ 301.587.7549
- ◆ Princeton Jct, NJ
- ◆ Silver Spring, MD

