



UC Berkeley School of Information

Faceted Metadata for Information Architecture and Search

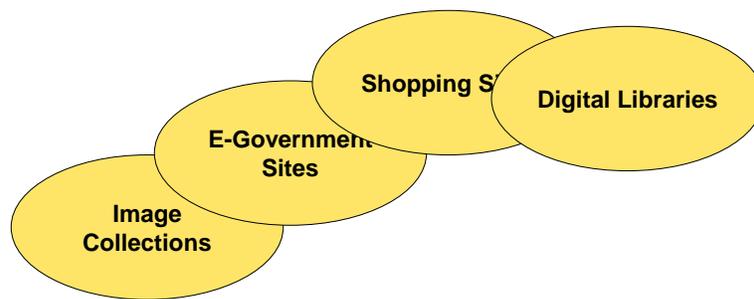
CHI Course - April 24, 2006
Session I

Marti Hearst, School of Information, UC Berkeley
Preston Smalley & Corey Chandler, eBay User Experience & Design

Session I: Agenda

- Intro and Goals (5 min)
- Faceted Metadata (15 min)
 - Definition
 - Advantages
- Interface Design using Faceted Metadata (40 min)
 - The Chess Analogy
 - The Nobel Prize Example
 - Results of Usability Studies
 - Software Tools
- Design Issues (15 min)
- Q&A (15 min)

Focus: Search and Navigation of Large Collections



3

Problems with Site Search

- Study by Vividence in 2001 on 69 Sites
 - 70% eCommerce
 - 31% Service
 - 21% Content
 - 2% Community
- Poorly organized search results
 - Frustration and wasted time
- Poor information architecture
 - Confusion
 - Dead ends
 - "back and forthing"
 - Forced to search

4

What we want to Achieve

- Integrate browsing and searching seamlessly
- Support exploration and learning
- Avoid dead-ends, “pogo’ing”, and “lostness”

5

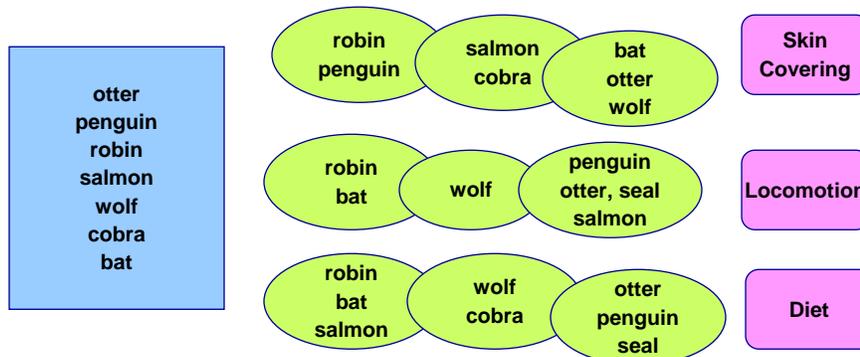
Main Idea

- Use hierarchical faceted metadata
- Design the interface to:
 - Allow flexible navigation
 - Provide previews of next steps
 - Organize results in a meaningful way
 - Support both expanding and refining the search

6

The Problem With Categories

- Most things can be classified in more than one way.
- Most organizational systems do not handle this well.
- Example: Animal Classification



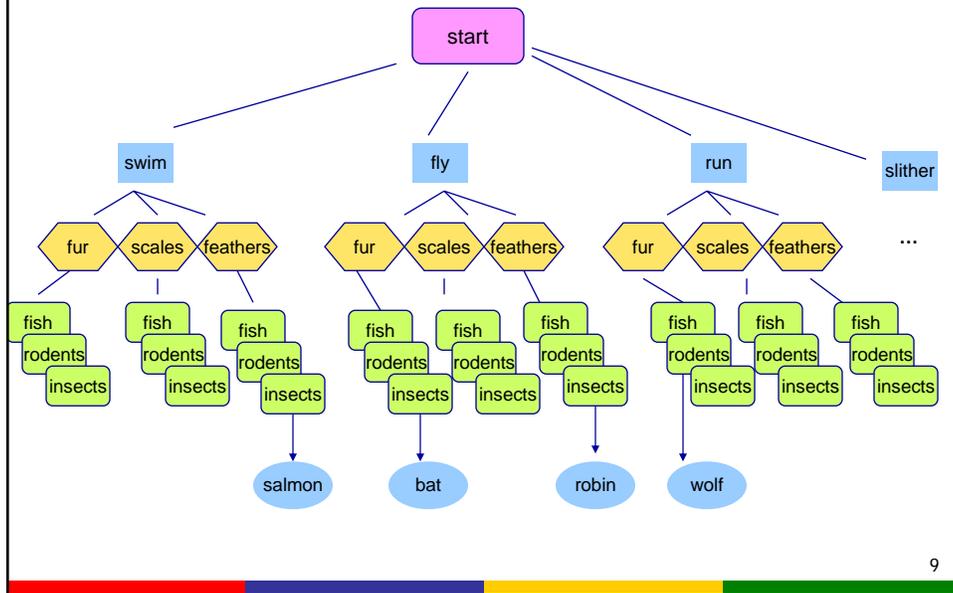
7

The Problem with Hierarchy

- Inflexible
 - Force the user to start with a particular category
 - What if I don't know the animal's diet, but the interface makes me start with that category?
- Wasteful
 - Have to repeat combinations of categories
 - Makes for extra clicking and extra coding
- Difficult to modify
 - To add a new category type, must duplicate it everywhere or change things everywhere

8

The Problem With Hierarchy

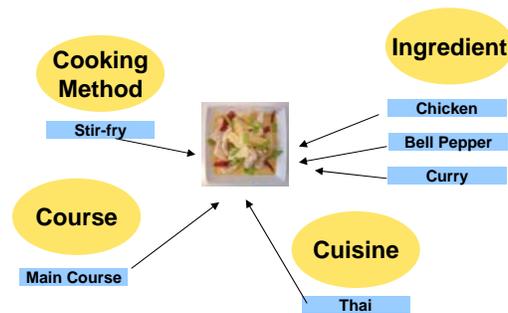


The Idea of Facets

- Facets are a way of labeling data
 - A kind of Metadata (data about data)
 - Can be thought of as properties of items
- Facets vs. Categories
 - Items are placed INTO a category system
 - Multiple facet labels are ASSIGNED TO items

The Idea of Facets

- Create INDEPENDENT categories (facets)
 - Each facet has labels (sometimes arranged in a hierarchy)
- Assign labels from the facets to every item
 - Example: recipe collection



11

The Idea of Facets

- Break out all the important concepts into their own facets
- Sometimes the facets are hierarchical
 - Assign labels to items from any level of the hierarchy



12

Using Facets

- Now there are multiple ways to get to each item



13

Using Facets

- The system only shows the labels that correspond to the current set of items
 - Start with all items and all facets
 - The user then selects a label within a facet
 - This reduces the set of items (only those that have been assigned to the subcategory label are displayed)
 - This also eliminates some subcategories from the view.

14

The Advantage of Facets

- Seamlessly integrates keyword search with the organizational structure.

These terms define your current search. Click the **x** to remove a term.

Refine your search within these categories:

DIET: insects **x**

COVERING (group results)
feather (1) [scales](#) (1)
[fur](#) (1)

LOCOMOTION (group results) [bat](#) [robin](#) [salmon](#)
[fly](#) (2) [swim](#) (1)

DIET: all > insects

3 results
Group by: [diet](#)
Sort by: [name](#)

Refine your search within these categories:

keyword "fur" **x**

DIET: insects **x**

COVERING (group results)
[fur](#) (1)

LOCOMOTION (group results) [bat](#)
[fly](#) (1)

DIET: all > insects

1 result (ungrouped)

17

The Advantage of Facets

- Very easy to expand out (loosen constraints)
- Very easy to build up complex queries.

Refine your search within these categories:

keyword "fur" **x**

DIET: insects **x**

COVERING (group results)
[fur](#) (1)

LOCOMOTION (group results) [bat](#)
[fly](#) (1)

DIET: all > insects

1 result (ungrouped)

Refine your search within these categories:

keyword "fur" **x**

COVERING (group results) **4 results**
[fur](#) (4)
Sort by: [name](#)

LOCOMOTION (group results) [bat](#) [otter](#) [seal](#) [wolf](#)
[fly](#) (1) [swim](#) (2)
[run](#) (1)

DIET (group results)
[fish](#) (2) [rodents](#) (1)
[insects](#) (1)

18

Advantages of Facets

- Can't end up with empty results sets
 - (except with keyword search)
- Helps avoid feelings of being lost.
- Easier to explore the collection.
 - Helps users infer what kinds of things are in the collection.
 - Evokes a feeling of "browsing the shelves"
- Is preferred over standard search for collection browsing in usability studies.
 - (Interface must be designed properly)

19

Advantages of Facets

- Seamless to add new facets and subcategories
- Seamless to add new items.
- Helps with "categorization wars"
 - Don't have to agree exactly where to place something
- Interaction can be implemented using a standard relational database.
- May be easier for automatic categorization

20

Information previews

- Use the metadata to show where to go next
 - More flexible than canned hyperlinks
 - Less complex than full search
- Help users see and return to previous steps
- Reduces mental work
 - Recognition over recall
 - Suggests alternatives
- More clicks are ok *only if* (J. Spool)
 - The “scent” of the target does not weaken
 - If users feel they are going towards, rather than away, from their target.

21

Facets vs. Hierarchy

- Early Flamenco studies compared allowing multiple hierarchical facets vs. just one facet.
- Multiple facets was preferred and more successful.



Limitation of Facets

- Do not naturally capture MAIN THEMES
- Facets do not show RELATIONS explicitly



Aquamarine
Red
Orange

Door
Doorway
Wall

- Which color associated with which object?

Photo by J. Hearst, jhearst.typepad.com

23

Terminology Clarification

- Facets vs. Attributes
 - Facets are shown independently in the interface
 - Attributes just associated with individual items
 - E.g., ID number, Source, Affiliation
 - However, can always convert an attribute to a facet
- Facets vs. Labels
 - Labels are the names used within facets
 - These are organized into subhierarchies
- Synonyms
 - There should be alternate names for the category labels
 - Currently (in Flamenco) this is done with subcategories
 - E.g., Deer has subcategories "stag", "fawn", "doe"

24

The Chess Analogy

25

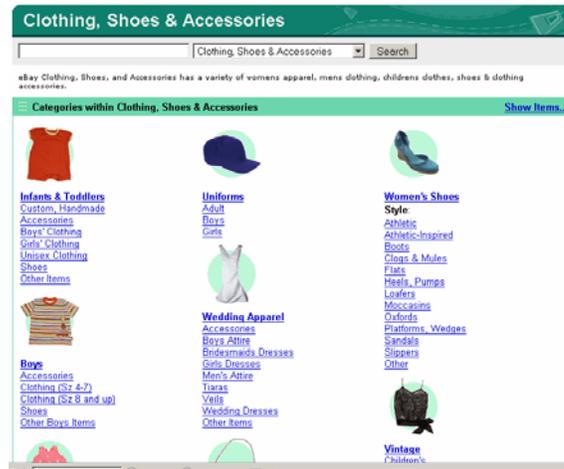
Analogy: Chess

- Chess is characterized by a few simple rules that disguise an infinitely complex game
- The three-part structure of play
 - Openings:
 - many strategies, entire books on this
 - Endgame:
 - well-defined, well-understood
 - Middlegame:
 - nebulous, hard to describe
- Our thought: information navigation has a similar structure, and the middlegame is critically underserved.

26

The Opening

- Usually exposes top-level hierarchy or top-level facets
- Usually also has a search component



27

The Endgame - Penultimate Pages

170399 items found in **Women's Shoes** [Add to My Favorite Categories](#) [Sell in this category](#)

List View | [Picture Gallery](#) Sort by: Time: newly listed [Customize](#)

	Compare	Item Title	PayPal	Bids	Price*	Shipping to USA <small>(edit)</small>	Time List
<input type="checkbox"/>		SEXY CAMEL SUEDE KNEE HIGH WEDGE HEEL SHOES BOOTS 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9 or 10 ~ More colors!		Buy It Now	\$19.99	\$14.99	Jan-25
<input type="checkbox"/>		Western Boho Leather Butterfly Inlay Cowboy Boots 6 NEW Top grade leather ~High Quality ~Stitched Leather Soles		-	\$0.99	\$12.50	Jan-25
<input type="checkbox"/>		~New Women's White Champion Shoes SIZE 7 1/2 L@@K NRT~		-	\$0.99	\$10.00	Jan-25
<input type="checkbox"/>		\$275 New Claudia Ciuti Italy Flamingo NEVIS Slide sz 11 Other SIZES available in our store!		-	\$89.99	\$10.00	Jan-25
<input type="checkbox"/>		TRASPINE Cheetah Prints Dress & Dance Shoes HAND MADE BALLROOM, ARGENTINE TANGO, SALSA, COCKTAIL *ALL LEATHER		-	\$82.00	\$11.00	Jan-25
<input type="checkbox"/>		New LUCHESE TURQUOISE COWBOY BOOTS Womens 7 B \$280		5	\$26.99	See description	Jan-24

28

The Endgame - Content Pages

[Back to list of items](#) Listed in category: [Clothing, Shoes & Accessories](#) > [Women's Shoes](#)

TRASPIE Cheetah Prints Dress & Dance Shoes HAND MADE
BALLROOM, ARGENTINE TANGO, SALSA, COCKTAIL *ALL LEATHER

Seller of this item? [Sign in](#) for your status



Starting bid: **US \$82.00**
[Place Bid >](#)

Time left: **9 days 14 hours**
10-day listing, Ends Feb-04-06 04:02:10 PST

Start time: Jan-25-06 04:02:10 PST

History: [0 bids](#)

Item location: North America
United States

Featured Plus! Listing

Ships to: Worldwide

Shipping costs: US \$11.00 -- Standard Flat Rate Shipping Service
Other shipping services available

[Shipping, payment details and return policy](#)

Description

Item Specifics - Women's Shoes

Width:	Medium (B)	Style:	Sandals
Heel Height:	High (3" and up)	Main Color:	Multi-Colored
Condition:	New: In Box		

29

The Middlegame

- The heart of the navigation experience
- There is a strategic advantage to having a good middlegame
 - Standard Web search doesn't handle this well
- This is where the flexible faceted metadata approach can work best.

30

Example: Nobel Prize Winners Collection (Before and After Facets)

31

Only One Way to View Laureates

 Nobelprize.org

HOME SITE HELP ABOUT

NOBEL | PHYSICS | CHEMISTRY | MEDICINE | **LITERATURE** | PEACE | ECONOMICS
LAUREATES | ARTICLES | EDUCATIONAL



The Nobel Prize in Literature

The Nobel Prize in Literature has recognized the whole spectrum of literary works including poetry, novels, short stories, plays, essays and speeches. Starting off with the first prize in 1901 to the poet and philosopher Sully Prudhomme, author of *Stances et Poèmes* (1865), the Prize has distinguished the works of authors from different languages and cultural backgrounds. It has been awarded to unknown masters as well as authors acknowledged worldwide.



Laureates
Find out facts about all Nobel Prize Laureates in Literature through press releases, biographies, Nobel lectures, interviews, etc. >



Articles
Read articles written by Nobel Laureates and other invited authors. >



Educational
Listen to the Nobel Literature radio or play a game. >

» Prize-Awarding Institution: The Swedish Academy

» Nomination and Selection of Literature Laureates

» Nobel Symposia - Literature

Nobelprize.org
Get to know all 776 Prize Winners! >

Explore & Learn!
Games and Simulations >
PLAY

Disarm the world of nuclear weapons! >

32

First, Choose Prize Type

The screenshot shows the Nobelprize.org homepage. At the top, there is a navigation bar with 'HOME', 'SITE HELP', 'ABOUT', and 'SEARCH'. Below this is a secondary navigation bar with 'NOBEL', 'PHYSICS', 'CHEMISTRY', 'MEDICINE', 'LITERATURE', 'PEACE', and 'ECONOMICS'. The main content area is divided into several sections. On the left, there is a 'SHORTCUTS' section with links to 'Press Room', 'Alfred Nobel', 'Nobel Foundation', 'Nobel Media', 'Nobel Museum', 'Nobel Peace Center', 'Prize Awarders', and 'Internet TV'. In the center, there is a large section titled 'The Nobel Prize' with a description of the award and a link to 'YOUR QUESTION ON NOBEL MINDS!'. Below this is a section titled '776 NOBEL PRIZE WINNERS SO FAR' with a link to 'More Prize Winner facts'. On the right, there is a section titled 'NOBEL PRIZE WINNERS 2005' with a link to 'Read about the Prizes and listen to the newly announced Winners!'. Below this are sections for 'The Nobel Prize in Physics', 'The Nobel Prize in Chemistry', 'The Nobel Prize in Physiology or Medicine', and 'The Nobel Prize in Literature'. The 'The Nobel Prize in Literature' link is circled in red.

Next, view the list!

The screenshot shows the Nobelprize.org laureates page for Literature. The page has a navigation bar with 'HOME', 'SITE HELP', 'ABOUT', and 'SEARCH'. Below this is a secondary navigation bar with 'NOBEL', 'PHYSICS', 'CHEMISTRY', 'MEDICINE', 'LITERATURE', 'PEACE', and 'ECONOMICS'. The main content area is titled 'The Nobel Prize in Literature - Laureates'. It features a search box labeled 'Find a Laureate' with a 'Name' input field and a 'GO' button. Below the search box is a 'Jump down to:' section with links for '1980', '1960', '1940', '1920', and '1901'. A list of laureates is displayed, including: 2005 Harold Pinter, 2004 Elfriede Jelinek, 2003 J.M. Coetzee, 2002 Imre Kertész, 2001 V.S. Naipaul, 2000 Gao Xingjian, 1999 Günter Grass, 1998 José Saramago, 1997 Dario Fo, 1996 Wislawa Szymborska, 1995 Seamus Heaney, and 1994 Kenzaburo Oe. A callout box with a yellow background and black text is overlaid on the page, stating: 'The user must first choose an Award type (literature), then browse through the laureates in chronological order. No choice is given to, say organize by year and then award, or by country, then decade, then award, etc.'

Using Hierarchical Faceted Metadata

35

Opening View Select literature from PRIZE facet

Nobel Prize Winners
1901 to 2004

Save Search History and Settings Return to Search New Search Logout

search Username default Password Log In
Create a New Account

Show tooltip previews of subcategories

GENDER		PRIZE	
female (33)	male (698)	chemistry (138)	medicine (182)
		economics (55)	peace (108)
		literature (10)	physics (166)

COUNTRY		YEAR	
Argentina (5)	China (2)	1900s (57)	1960s (79)
Australia (6)	Colombia (1)	1910s (40)	1970s (103)
Austria (12)	Costa Rica (1)	1920s (54)	1980s (97)
Belgium (11)	Czechoslovakia (2)	1930s (56)	1990s (98)
Burma (1)	Denmark (13)	1940s (43)	2000s (56)
Canada (9)	more...	1950s (72)	
Chile (2)			

AFFILIATION	
Allied Reparation Commission (1)	Brussels (1)
Argentina (3)	Canada (6)
Australia (2)	Committee for the Defense of National Interests and International Conciliation (1)
Austria (6)	Council national économique (1)
Belgium (7)	Costa Rica (1)
Berlin University (1)	more...
Briand-Kellogg Pact (3)	

Group results by YEAR facet

Nobel Prize Winners
1901 to 2004

Save Search | History and Settings | Return to Search | New Search | Logout

These terms define your current search. Click the **x** to remove a term.

PRIZE: literature

Items 1 to 40 of 101 results
Group by: prize
Sort by: usual name, year of birth, year of death, country

Refine your search further within these categories:

GENDER (group results)
female (10) | male (91)

COUNTRY (group results)
Australia (1) | Denmark (3)
Austria (1) | Egypt (1)
Belgium (1) | Federal Republic of
Chile (2) | Germany (2)
Colombia (1) | Finland (1)
Czechoslovakia (1) | more...

AFFILIATION (group results)

PRIZE: all > literature

YEAR (group results)
1900s (10) | 1910s (9) | 1920s (10) | 1930s (9) | 1940s (6) | 1950s (10) | 1960s (11) | 1970s (11) | 1980s (10) | 1990s (10) | more...

Albert Camus 1913-1960 | Alexandr Solzhenit... 1918- | Anatole France 1844-1924 | André Gide 1869-1951

Select 1920's from YEAR facet

search

all items | in current results

PRIZE: literature

Refine your search within these categories:

GENDER (group results)
female (10) | male (91)

COUNTRY (group results)
Australia (1) | Denmark (3)
Austria (1) | Egypt (1)
Belgium (1) | Federal Republic of
Chile (2) | Germany (2)
Colombia (1) | Finland (1)
Czechoslovakia (1) | more...

AFFILIATION

PRIZE: all > literature

YEAR
1900s (10) | 1910s (9) | 1920s (10) | 1930s (9) | 1940s (6) | 1950s (10) | 1960s (11) | 1970s (11) | 1980s (10) | 1990s (10) | more...

Recently Viewed Items
[Go to Item History](#)

101 items, grouped by YEAR (view ungrouped items)

1900s (10)
Bjornstjerne Bjern... 1832-1910 | Frédéric Mistral 1830-1914 | Giosuè Carducci 1835-1907 | Henryk Sienkiewicz 1846-1916 | all 10 items...

1910s (9)
Carl Spitteler 1845-1924 | Gerhart Hauptmann 1862-1946 | Henrik Pontoppidan 1857-1943 | Karl Gjellerup 1857-1919 | all 9 items...

1920s (10)

Current query is PRIZE > literature AND YEAR: 1920's. Now remove PRIZE > literature

Nobel Prize Winners
1901 to 2004

Save Search | History and Settings | Return to Search | New Search | Logout

These terms define your current search. Click the **x** to remove a term.

PRIZE: literature **x**
YEAR: 1920s **x**

10 results
Group by: prize, year
Sort by: usual name, year of birth, year of death, country

GENDER (group results)
female (2) | male (8)

COUNTRY (group results)
France (2) | Norway (2)
Germany (1) | Poland (1)
Ireland (1) | Spain (1)
Italy (1) | United Kingdom (1)

AFFILIATION (group results)

PRIZE: all > literature (group results)

YEAR: all > 1920s (group results)
1920 (1) | 1925 (1)
1921 (1) | 1926 (1)
1922 (1) | 1927 (1)

Now Group By YEAR > 1920's

Nobel Prize Winners
1901 to 2004

Save Search | History and Settings | Return to Search | New Search | Logout

These terms define your current search. Click the **x** to remove a term.

YEAR: 1920s **x**

Items 1 to 40 of 54 results
Group by: year **x**
Sort by: usual name, year of birth, year of death, country

GENDER (group results)
female (2) | male (52)

COUNTRY (group results)
Austria (2) | Italy (1)
Canada (2) | Norway (4)
Denmark (3) | Poland (1)
France (8) | Spain (1)
Germany (11) | more...
Ireland (1)

AFFILIATION (group results)
Allied Reparation Commission (1) | Dawes Plan (1)
Denmark (3) | France (6)
Austria (2) | Berlin University (1)
Briand-Kellogg Pact (2) | French Parliament (1)
more...

Hierarchy Traversal: Group By YEAR > 1920's, and drill down to 1921

Nobel Prize Winners
1901 to 2004

Save Search History and Settings Return to Search New Search Logout

search
all items in current results

These terms define your current search. Click the **x** to remove a term.
YEAR: 1920s x

Refine your search within these categories:

GENDER (group results)
female (2) male (52)

COUNTRY (group results)
Austria (2) Italy (1)
Canada (2) Norway (4)
Denmark (3) Poland (1)
France (8) Spain (1)
Germany (11) more...
Ireland (1)

AFFILIATION (group results)
Allied Reparation Commission (1) Dawes Plan (1)
Austria (2) Denmark (3)
Berlin University (1) France (6)
Briand-Kellogg French Parliament (1)
Pact (2) more...
Brussels (1) Canada (2)

PRIZE (group results)
chemistry (10) peace (11)
literature (10) physics (12)
medicine (4)

54 items, grouped by YEAR (view ungrouped items)

1920 (5)

 August Krogh
1874-1949

 Charles Edouard Gu...
1861-1938

 Knut Hamsun
1859-1952

 Léon Bourgeois
1851-1925

 Walther Nernst
1864-1941

1921 (5)

Select an individual item

Nobel Prize Winners
1901 to 2004

Save Search History and Settings Return to Search New Search Logout

search
all items in current results

These terms define your current search. Click the **x** to remove a term.
YEAR: 1920s > 1921 x

Refine your search within these categories:

GENDER (group results)
male (5)

COUNTRY (group results)
France (1) Sweden (1)
Germany (1) Switzerland (1)
Norway (1) United Kingdom (1)

AFFILIATION (group results)
Brussels (1) Sweden (1)
Germany (1) United Kingdom (1)
League of Nations (1)

PRIZE (group results)
chemistry (1) peace (2)
literature (1) physics (1)

YEAR: all > 1920s > 1921

5 results
Group by [year](#)
Sort by: [usual name](#), [year of birth](#), [year of death](#), [country](#)

 Albert Einstein
1879-1955

 Anatole France
1844-1924

 Christian Lange
1869-1938

 Frederick Soddy
1877-1956

 Hjalmar Branting
1860-1925

Recently Viewed Items
[Go to Item History](#)

Use Endgame to expand out

Nobel Prize Winners
1901 to 2004

Save Item History and Settings Return to S

Item 1 of 4 ([back to results](#))
[next](#) ▶



Albert Einstein
1879-1955
[Biography](#)
[Nobel Lecture](#)

Current search:
COUNTRY: Switzerland x
PRIZE: physics x

Select any link to see items in a related category.

[Find Similar Items](#)

more general categories	information about this item
GENDER	GENDER
male (698)	male (698) <input type="checkbox"/>
COUNTRY	COUNTRY
Germany (44)	Germany (44) <input type="checkbox"/>
Switzerland (27)	Switzerland (27) <input type="checkbox"/>
AFFILIATION	AFFILIATION
Germany (41)	Kaiser-Wilhelm-Institut für Physik (2) <input type="checkbox"/>
Berlin (10)	
PRIZE	PRIZE
physics (166)	physics (166) <input type="checkbox"/>
YEAR	YEAR
1920s (54)	1921 (5) <input type="checkbox"/>
USUAL NAME:	Albert Einstein
LONG NAME:	Albert Einstein
YEAR OF BIRTH:	1879
YEAR OF DEATH:	1955

Use Endgame to expand out

Nobel Prize Winners
1901 to 2004

Save Search History and Settings Return to Search New Search Logout

search
 all items in current results

These terms define your current search. Click the x to remove a term.
PRIZE: physics x

Refine your search within these categories:

GENDER (group results)
[female](#) (2) [male](#) (164)

COUNTRY (group results)

Austria (3)	Germany (11)
Canada (1)	India (1)
China (2)	Ireland (1)
Denmark (3)	Italy (3)
Federal Republic of Germany (10)	more...
France (11)	

AFFILIATION (group results)

Austria (1)	Ireland (1)
Denmark (3)	Italy (2)
Federal Republic of Germany (6)	Japan (3)
France (12)	Russia (1)
Germany (12)	more...
India (1)	

PRIZE: all > physics

Items 1 to 40 of 166 results
 Group by: [prize](#)
 Sort by: usual name, [year of birth](#), [year of death](#), [country](#)

1 41 81 121 161

 Aage N. Bohr 1922-	 Abdus Salam 1926-1996	 Albert A. Michelson 1852-1931	 Albert Einstein 1879-1955
 Aleksandr M. Prokhorov 1916-2002	 Alexei A. Abrikosov 1928-	 Alfred Kastler 1902-1984	 Anthony J. Leggett 1938-

Or use "More like this" to find similar items

Nobel Prize Winners

1901 to 2004

[Save Item](#)
[History and Settings](#)
[Return to Search](#)

Item 1 of 5 ([back to results](#)) [next](#) ▶



Albert Einstein
1879-1955
[Biography](#)
[Nobel Lecture](#)

Current search: **YEAR: 1920s > 1921**

Select any link to see items in a related category.

Find Similar Items (4)

<p>more general categories</p> <p>GENDER</p> <ul style="list-style-type: none"> male (696) <p>COUNTRY</p> <ul style="list-style-type: none"> Germany (44) Switzerland (27) ✓ <p>AFFILIATION</p> <ul style="list-style-type: none"> Germany (41) Berlin (10) Kaiser-Wilhelm-Institut für Physik (2) ✓ <p>PRIZE</p> <ul style="list-style-type: none"> physics (166) ✓ <p>YEAR</p> <ul style="list-style-type: none"> 1920s (54) 1921 (5) <p>USUAL NAME: Albert Einstein LONG NAME: Albert Einstein YEAR OF BIRTH: 1879 YEAR OF DEATH: 1955</p>	<p>information about this item</p> <p>GENDER</p> <p>COUNTRY</p> <p>AFFILIATION</p> <p>PRIZE</p> <p>YEAR</p>
--	--

Start a new search using keyword "California"

Nobel Prize Winners

1901 to 2004

[Save Search](#)
[History and Settings](#)
[Return to Search](#)
[New Search](#)
[Logout](#)

all items | in current results

Refine your search within these categories:

GENDER (group results)

- [male](#) (4)

COUNTRY: all > Switzerland

AFFILIATION (group results)

- [France](#) (1)
- [Switzerland](#) (2)
- [Germany](#) (1)

PRIZE: all > physics

YEAR (group results)

- [1920s](#) (2)
- [1980s](#) (2)

These terms define your current search. Click the x to remove a term.

COUNTRY: Switzerland x

PRIZE: physics x

4 results

Group by: [country](#), [prize](#)

Sort by: usual name, [year of birth](#), [year of death](#), [country](#)



[Albert Einstein](#)
1879-1955



[Charles Edouard Gu...](#)
1861-1938



[Heinrich Rohrer](#)
1933-



[K. Alex Müller](#)
1927-

Recently Viewed Items

[Go to Item History](#)



Note that category structure remains after the keyword search

"California" appears in these category names:

- affiliation > [California](#)
- affiliation > ... > Berkeley > [University of California](#)
- affiliation > ... > Irvine > [University of California](#)
- affiliation > ... > La Jolla > [University of California](#)
- affiliation > ... > [University of California](#)
- affiliation > ... > [University of Southern California](#)
- affiliation > ... > [California Institute of Technology](#)
- affiliation > ... > San Diego > [University of California](#)
- affiliation > ... > [University of California](#)
- affiliation > ... > [University of California](#)

search
 all items in current results

These terms define your current search. Click the **x** to remove a term.

keyword "California" **x**

Refine your search within these categories:

GENDER (group results)

[female](#) (1) [male](#) (64)

COUNTRY (group results)

[Canada](#) (1) [Norway](#) (1)
[Egypt](#) (1) [United Kingdom](#) (2)
[Federal Republic of Germany](#) (1) [United States of America](#) (60)

AFFILIATION (group results)

[Federal Republic of Germany](#) (1) [United States of America](#) (65)

PRIZE (group results)

[chemistry](#) (20) [peace](#) (1)
[economics](#) (8) [physics](#) (25)
[medicine](#) (4)

YEAR (group results)

[1920s](#) (1) [1970s](#) (3)
[1930s](#) (3) [1980s](#) (11)
[1940s](#) (4) [1990s](#) (15)

Items 1 to 40 of 65 results

Sort by: usual name, [year of birth](#), [year of death](#), [country](#)

1 41



[A. Michael Spence](#)
1943-



[Ahmed Zewail](#)
1946-



[Alan Heeger](#)
1936-



[Arthur Kornberg](#)
1918-



[Arthur L. Schawlow](#)
1921-1999



[Burton Richter](#)
1931-



[Carl D. Anderson](#)
1905-1991



[Clive W.J. Granger](#)
1934-

The query is now a keyword ANDed with a facet subhierarchy

Nobel Prize Winners

1901 to 2004

[Save Search](#) [History and Settings](#) [Return to Search](#) [New Search](#) [Logout](#)

search
 all items in current results

These terms define your current search. Click the **x** to remove a term.

keyword "California" **x**

PRIZE: economics **x**

Refine your search within these categories:

GENDER (group results)

[male](#) (8)

COUNTRY (group results)

[Norway](#) (1) [United States of America](#) (6)
[United Kingdom](#) (1)

AFFILIATION (group results)

[United States of America](#) (8)

PRIZE: [all](#) > economics

YEAR (group results)

[1980s](#) (1) [2000s](#) (5)
[1990s](#) (2)

Recently Viewed Items

[Go to Item History](#)

8 results

Group by: [prize](#)

Sort by: usual name, [year of birth](#), [year of death](#), [country](#)



[A. Michael Spence](#)
1943-



[Clive W.J. Granger](#)
1934-



[Daniel L. McFadden](#)
1937-



[Finn E. Kydland](#)
1943-



[George A. Akerlof](#)
1940-



[Gerard Debreu](#)
1921-2004



[John C. Harsanyi](#)
1920-2000



[William F. Sharpe](#)
1934-

The Challenges

- Users generally do not adopt new search interfaces
- How to show a lot more information without overwhelming or confusing?
 - Most users prefer simplicity unless complexity really makes a difference
 - Small details matter
- Next we describe the design decisions that we have found lead to success.

49

Usability Study Results

50

Search Usability Design Goals

1. Strive for Consistency
2. Provide Shortcuts
3. Offer Informative Feedback
4. Design for Closure
5. Provide Simple Error Handling
6. Permit Easy Reversal of Actions
7. Support User Control
8. Reduce Short-term Memory Load

From Shneiderman, Byrd, & Croft, Clarifying Search, DLIB Magazine, Jan 1997. www.dlib.org

51

Usability Studies

- Usability studies done on 3 collections:
 - Recipes (epicurious): 13,000 items
 - Architecture Images: 40,000 items
 - Fine Arts Images: 35,000 items
- Conclusions:
 - Users like and are successful with the dynamic faceted hierarchical metadata, especially for browsing tasks
 - Very positive results, in contrast with studies on earlier iterations.

52

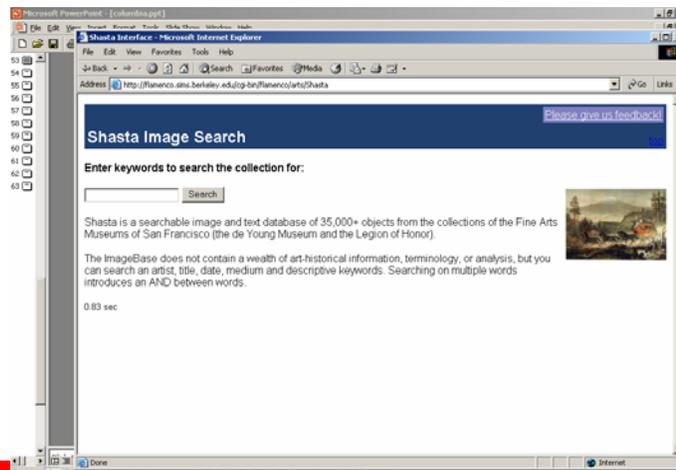
Most Recent Usability Study

- Participants & Collection
 - 32 Art History Students
 - ~35,000 images from SF Fine Arts Museum
- Study Design
 - Within-subjects
 - Each participant sees both interfaces
 - Balanced in terms of order and tasks
 - Participants assess each interface after use
 - Afterwards they compare them directly
 - Data recorded in behavior logs, server logs, paper-surveys; one or two experienced testers at each trial.
 - Used 9 point Likert scales.
 - Session took about 1.5 hours; pay was \$15/hour

53

The Baseline System

- Floogle (takes the best of the existing keyword-based image search systems)



54

Address <http://flamenco.sims.berkeley.edu/cgi-bin/flamenco/arts/Shasta?words=sword&q=8&facet=>

Shasta Image Search

Search all items within current results

Current Search: sword

1 2 3 4 5 6 7 8 9 10 [Next 10](#)

Items 1 - 40 of 522 results



(One From) from ...
Callot
1633



(One From) from ...
Callot
1633



(One From) Les E...
Callot
1635



(One from) Lux C...
Callot
1628

(33 items remaining) Downloading picture <http://206.14.230.204/imagebase2-200/404120210391/images/4041202103910042.jpg...>

Slide 54 of 63 Selling a Product or Service

Start AT&T Global Net... C:\Documents a... Search Results Shasta Interf... Microsoft Power...

Address <http://flamenco.sims.berkeley.edu/cgi-bin/flamenco/arts/Shasta?q=sword&index=5>

Shasta Image Search

Search all items within current results

Current Search: sword

item 6 of 522 ([back to results](#))

[previous](#) [next](#)

(One of) Five Of The Set Of Cardinal Virtues - Justitia



Details about this image:

Media:	print
Location:	Germany
Date:	16th century
Themes:	sword
People:	woman
Artists:	Beham, Barthel, 1502 - 1540
Record Number:	55649
Object Title:	(One of) Five Of The Set Of Cardinal Virtues - Justitia
Description:	Before a low masonry wall a winged woman stands, unsheathed sword in her right hand, and a balance in her
Artist Name:	Barthel Beham, 1502 - 1540
Media Detail:	Engraving

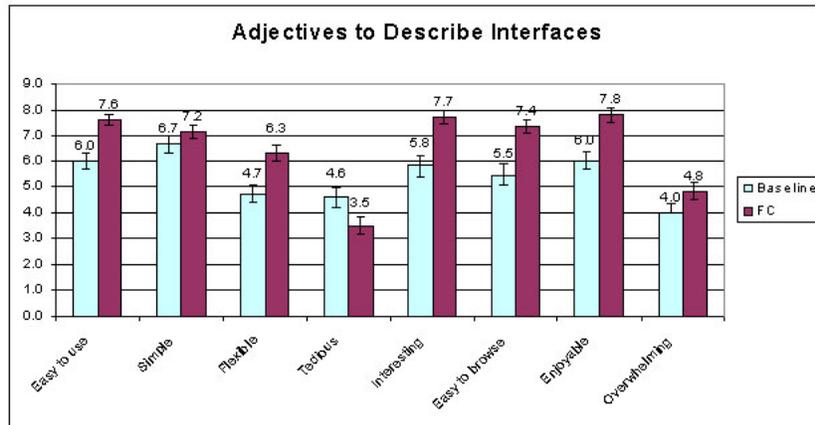
Perform search on relevant keywords:

[16th century](#)
[Beham, Barthel, 1502 - 1540](#)
[Germany](#)
[print](#)
[sword](#)

Done Internet

Start AT&T Global Net... C:\Documents a... Search Results Shasta Interf... Microsoft Power...

Post-Interface Assessments



All significant at $p < .05$ except “simple” and “overwhelming”

57

Post-Test Comparison

Which Interface Preferable For:

Find images of roses
 Find all works from a given period
 Find pictures by 2 artists in same media

Baseline	Faceted
15	16
2	30
1	29

Overall Assessment

More useful for your tasks
 Easiest to use
 Most flexible
 More likely to result in dead ends
 Helped you learn more
 Overall preference

4	28
8	23
6	24
28	3
1	31
2	29

58

Software Tools

59

Flamenco (flamenco.berkeley.edu)

- Demos, papers, talks are online
 - Nobel example uses this toolkit
- Open source software is now available!
 - Requires Apache and a DBMS (MySQL)
 - You format your data in simple text files
 - (We may add XFML support later)
 - Our programs convert to appropriate DBMS tables
- Check it out:
 - <http://flamenco.berkeley.edu>

flamenco search
school of information management & systems



60

FacetMap (facetmap.com)

The screenshot shows the FacetMap website interface. At the top, it says "FacetMap Wine Demo" and "presented by FacetMap". Below this are navigation links: "Instructions", "Configure", and "XML".

There are three main filter sections:

- Browse by Varietal:** Red Wines (171), White Wines (149), Bubbly (40), Pink Wines (30), Dessert/Fortified Wines (41)
- Browse by Region:** French (55), German (6), Italian (67), New Zealand (2), Other European (8), Portuguese (19), South American (4), Spanish (15), USA (235)
- Browse by Price:** Inexpensive (under \$20) (237), Mid-priced (\$20-100) (183), Ultra-classy (over \$100) (11)

Below the filters, it states: "You've narrowed your search down to 431 results. Here are the top 5".

The top 5 results are:

- Turning Leaf 2000 White Zinfandel
- Stone Creek 2000 White Zinfandel
- RH Phillips 2000 White Zinfandel
- Rabbit Ridge 2000 White Zinfandel
- Montevina 2000 White Zinfandel

Below this list, there are more filters:

- Browse by Region:** Other European (1), South American (1), USA (1)
- Browse by Price:** Under \$10 (1), \$10-\$20 (2)

It then states: "You've selected these headings:"

- > **Any Varietal** > **Red Wines** > **Cabernet Sauvignon**
- > **Any price** > **Inexpensive (under \$20)**

Finally, it says: "You've narrowed your search down to these 3 results:"

- Alice White 2000 Cabernet Sauvignon
- Alexander Valley 1999 Cabernet Sauvignon (half-bottle)
- Alamos 1999 Mendoza Cabernet Sauvignon

Commercial Implementations

- (Not an exhaustive list)
 - endeca.com
 - siderean.com
 - www.dieselpoint.com
 - www.rawsugar.com

Design Issues

63

Small Details Matter

- With text, it's very difficult to avoid a cluttered look
- Must carefully design visual details
 - White space
 - Font style and weight contrast
 - Color that distinguishes and doesn't clash

BEFORE

Looking within: [Locations: Italy](#)
[Periods: Renaissance](#)
[Techniques: decoration](#)

	REFINE
<input type="checkbox"/> Arctic	.1
<input type="checkbox"/> Canada	.167
<input type="checkbox"/> Mexico	.571
<input type="checkbox"/> United States of America	.10835

AFTER

keyword "seed"
Animals and Plants: [Flowers > iris](#)
Location: [Europe > United Kingdom > England](#)
Media: [Print > engraving](#)

Objects (group results)

Clothing (40)	Musical instruments (6)
Containers (6)	Vehicles (14)
Food and meals (23)	Weapons (13)
Lighting (2)	Writing tools (5)

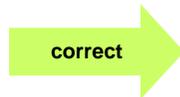
64

“Breadcrumb” Design

- Chains should only be used within hierarchy
- Need to separate the facets
 - This allows both expanding within a facet and removing one facet while retaining the rest of the navigation.



[Shoes](#) > [\\$50 - \\$60](#) > [Shoebuy.com](#) > [Women](#)



keyword "seed" ✕

Animals and Plants: [Flowers](#) > [iris](#) ✕

Location: [Europe](#) > [United Kingdom](#) > [England](#) ✕

Media: [Print](#) > [engraving](#) ✕

20,791 items found in Shoes

Product Type [Cancel](#) Shoe Width [Cancel](#)
Men's Shoes Regular, Wide

65

Checkboxes vs. Hyperlinks

- People LOVE checkboxes *in principle*
- However, they are *dangerous* because, when ANDED, they lead to empty results which people HATE
- They also often have confusing semantics
 - Combine AND, OR, keyword search, etc.
 - See Advanced Search at eat.epicurious.com

66

Checkboxes vs. Hyperlinks

keyword

special considerations
(about special considerations)

Low Cal Meatless Wine Pairing One Dish Meal
 Low Fat Quick Part of Menu Epicurious TV
 Low Carb Kid-Friendly Chef Recipes

course cuisine season / occasion

Appetizers all cuisines all occasions

type of dish preparation method source

all types all methods all sources

main ingredients

<input type="checkbox"/> Beans	<input type="checkbox"/> Duck	<input type="checkbox"/> Greens	<input type="checkbox"/> Pasta	<input type="checkbox"/> Tomatoes
<input type="checkbox"/> Beef	<input type="checkbox"/> Eggs	<input type="checkbox"/> Herbs	<input type="checkbox"/> Peppers	<input type="checkbox"/> Turkey
<input type="checkbox"/> Berries	<input type="checkbox"/> Fish	<input checked="" type="checkbox"/> Lamb	<input type="checkbox"/> Pork	<input type="checkbox"/> Vegetables
<input type="checkbox"/> Cheese	<input type="checkbox"/> Fruits	<input type="checkbox"/> Mushrooms	<input type="checkbox"/> Potatoes	<input type="checkbox"/> Yogurt
<input type="checkbox"/> Chicken	<input type="checkbox"/> Game	<input type="checkbox"/> Mustard	<input type="checkbox"/> Poultry	
<input type="checkbox"/> Chocolate	<input type="checkbox"/> Garlic	<input type="checkbox"/> Nuts	<input type="checkbox"/> Rice	
<input type="checkbox"/> Citrus	<input type="checkbox"/> Ginger	<input type="checkbox"/> Olives	<input type="checkbox"/> Shellfish	
<input type="checkbox"/> Dairy	<input type="checkbox"/> Grains	<input type="checkbox"/> Onions	<input type="checkbox"/> Soy	

exclude from search
(about exclude)

dairy nuts shellfish eggs

Sorry, your search returned no results for: **avocado, Low Cal + Low Fat + Appetizers + Lamb + not dairy**

Perhaps one of the options below can help:

- Try a keyword search (e.g. ham and eggs) in the recipe search box at the top right of the page.
- Try an **advanced search**.
- Browse** recipes by category.
- See **helpful search tips**.

(Advanced search from epicurious.com) 67

Handling Disjunction (ORs)

- The faceted queries are really a combination of ANDs and ORs
- The facet hierarchies actually do this
 - Example: select
 - Animal > Feline AND
 - Location >Continent > North America
 - This actually does a query as follows:
 - AND(OR (panther, jaguar, lion),
 - OR (US, Canada, Mexico))
- Nevertheless, sometimes you want to select just a subset of a facet's labels

Handling Disjunction (ORs)

- Using checkboxes with ORs can work
- However, if allowed everywhere they clutter the screen
- eBay shows how to do it:
 - Focus on one facet
 - Select multiple labels
 - Treat as an OR
 - Won't get empty results



69

How many facets?

- Many facets means more choice, but more scanning and more scrolling
- An alternative (by eBay)
 - initially show the few most important facets
 - allow user to choose a label from one
 - then show an additional new facet (next most important)
- The right choice depends on the application
 - Browsing art history vs. shopping

70

Revealing Hierarchy

- One approach (Flamenco): keep all facets present, show deeper level as you descend.

Media: all > Print (group results)	
Aquatint (378)	Lithograph (2600)
Drypoint (708)	Mezzotint (378)
Engraving (3754)	Photogravure (70)
Etching (5664)	Poster (6)
Heliogravure (11)	Woodcut (677)

Date (group results)	
15th century (68)	19th century (4465)
16th century (1124)	20th century (967)
17th century (2812)	Date unknown (71)
18th century (1382)	Multiple centuries (4079)

Location: all > Europe	
Austria (43)	France (5323)
Belgium /	French (18)
flanders (442)	Germany (1568)
Bohemia (230)	Holland (998)
Czechoslovakia (37)	more ...
Denmark (1)	
England (1)	

71

Revealing Hierarchy

- Another approach (eBay): show only one level at a time; if a facet is chosen that has subhierarchy, show the next level as an additional facet.
 - Example:
 - In Shoes, user selects Style > Athletic
 - Now show a new facet that shows types of Athletic shoes
 - Hiking, Running, Walking, etc.

Shoe Style	Brand	Shoe Sub-Style
<ul style="list-style-type: none"> Athletic (2,117) Boots (1,217) Sandals (1,027) Casual (817) Select more/multiple...	<ul style="list-style-type: none"> Nike (2,117) Adidas (2,010) Skechers (1,927) Reebok (1,127) Select more/multiple...	<ul style="list-style-type: none"> Basketball (817) Running (810) Cross-Training (427) Walking (417) Select more/multiple...

72

Reversibility

- Make navigation urls consistent and persistent
 - This way the Back button always works
 - Allows for bookmarking of pages

73

Choosing Labels

- Labels must be short - to fit!
 - Tricky with terminology: "endoplasmic reticulum"
- Labels must be evocative
 - It's very difficult to find successful words
 - Depends on user familiarity with the domain
 - Use card-sorting exercises
 - Associate synonyms with labels
- Beware the context of label use!
 - The "kosher salt" incident

74

Creating Facets

- Need to balance depth and breadth
 - Avoid long “skinny” hierarchies
 - Example from the Art and Architecture Thesaurus:
 - 7 clicks before you get to anything interesting

Top of the AAT hierarchies

.... Objects Facet
..... Built Environment
..... Built Complexes and Districts
..... complexes
..... <complexes by function>
..... <commercial complexes>
..... shopping centers

75

Summary

- Flexible application of hierarchical faceted metadata is a proven approach for navigating large information collections.
 - Midway in complexity between simple hierarchies and deep knowledge representation.
 - Currently in use on e-commerce sites; spreading to other domains
- We have presented design issues and principles.

76

Session II: Agenda

- Highlights from Session 1 (5 min)
- Interactive exercise (20 min)
- Evolution of IA at eBay (10 min)
- Demo of latest eBay design (5 min)
- Lessons learned at eBay (35 min)
- Discussion and Q&A (15 min)

77

Discussion

78



UC Berkeley School of Information

Faceted Metadata for Information Architecture and Search

CHI Course - April 24, 2006
Session II

Marti Hearst, School of Information, UC Berkeley
Preston Smalley & Corey Chandler, eBay User Experience & Design

Session II: Agenda

- Highlights from Session 1 (5 min)
- Interactive exercise (20 min)
- Evolution of IA at eBay (10 min)
- Demo of latest eBay design (5 min)
- Lessons learned at eBay (35 min)
- Discussion and Q&A (15 min)

Highlights from Session I

81

Terminology Clarification

- Facets vs. Attributes
 - Facets are shown independently in the interface
 - Attributes just associated with individual items
 - E.g., ID number, Source, Affiliation
 - However, can always convert an attribute to a facet
- Facets vs. Labels
 - Labels are the names used within facets
 - These are organized into subhierarchies
- Synonyms
 - There should be alternate names for the category labels
 - Currently (in Flamenco) this is done with subcategories
 - E.g., Deer has subcategories "stag", "fawn", "doe"

82

Interactive Exercise

- Introduce yourself to 4-6 people near you that you don't already know
- Exchange business cards and note:
 - Region they live (e.g. Canada, Western Europe)
 - Role (e.g. Information Architect, User Researcher)
 - Number of years of experience

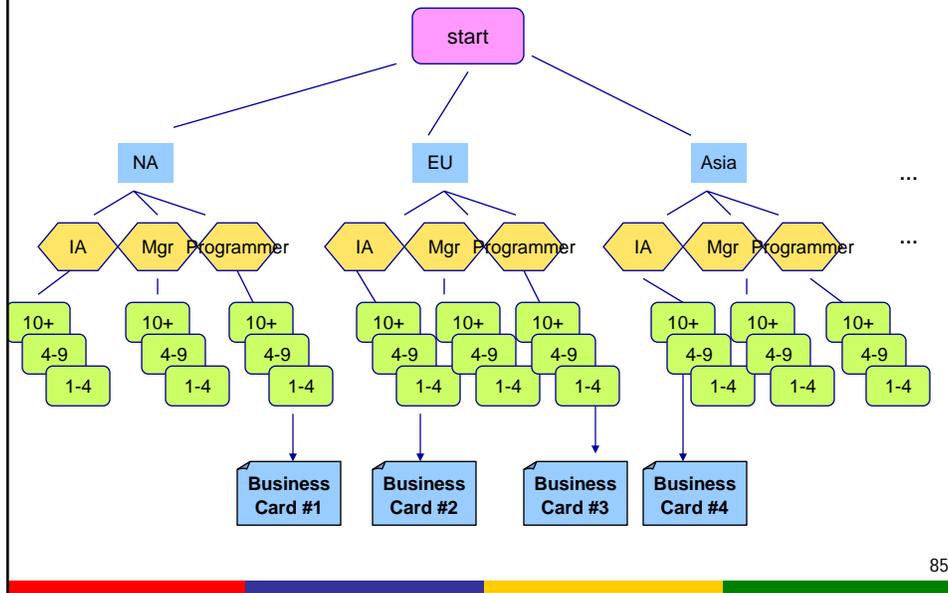
83

Interactive Exercise

- Organize the business cards using a hierarchy assuming you are a talent recruiter in Montreal

84

Interactive Exercise: One way...



85

Evolution of IA at eBay

Flat Structure (2000 and earlier)

Clothing, Shoes & Accessories

= Shoes

- Women's Shoes
- Boots
- Pumps
- Sandals

Basic Search: pda

Computers & Electronics

6769 items found for pda

Picture	Item Title	Price	Bids	Time Left
	SONY CLIE PEG-T665C HANDHELD PC PDA ORGANIZER	\$102.50	7	<1m
	NOKIA 9290 PDA/GSM PHONE UNLOCKED *NEW*	\$255.03	12	<1m
	Palm m100 2mb PDA m 100 w/Cradle Case + BONUS	\$39.99	1	<1m
	16 NEW PDA Protector DELL AXDM X5 X 2.5X	\$9.75		1m
	#7044 Handspring Visor Deluxe PDA AS-IS	\$16.50	3	2m

Matching Categories:

- Computers & Electronics
- PDAs/Handheld PCs (4075)
- Cell Phones & Plans (395)
- Gadgets & Other Electronics (144)
- Laptops (90)
- Portable Audio & Video (42)
- Printers & Printer Supplies (42)
- Desktop Drives & Peripherals (39)

86

Evolution of IA at eBay

Flat Structure

(2000 and earlier)

Clothing, Shoes & Accessories

▀ Shoes

Women's Shoes

- Boots
- Pumps
- Sandals

Issues with approach:

- ▀ Products had to be categorized in just one way.

Ex: Where are all the red Women's shoes?

- ▀ Adding more descriptors meant creating a deep and complicated category structure.

Ex: Shoes > Women's > Boots > Black > Size 8

87

Evolution of IA at eBay

+ Product Facets

(2001 - 2005)

Clothing, Shoes & Accessories

▀ Shoes

Women's Shoes

- Style (Boots, Pumps, Sandals...)
- Size (6, 6.5, 7, 7.5...)
- Color (Black, Red, Tan...)

▀ Condition (New, Used...)

Added Facets (flat)

The screenshot shows the eBay search results page for 'Women's Shoes'. A red circle highlights the 'Women's Shoes Finder' facet panel on the left side of the results. This panel includes several filter options: 'Size' (set to 'Any'), 'Style' (set to 'Any'), 'Main Color' (set to 'Any'), and 'Condition' (set to 'Any'). Below these filters is a 'Search Keywords' field and a 'Show Items' button. The main search results area shows 154680 items found, with two featured items: 'NWT ICON STYLE A SAMPLE LAMBSKIN LONG BOOTS BY TWO LEPS' for \$59.99 and 'COWBOY BOOTS' BHO'VIN TAGE' BUTTERFLY SEXY GUCCI GEL SZ 7' for \$0.99. The top navigation bar includes 'Buy', 'Sell', 'My eBay', 'Community', and 'Help'.

88

Evolution of IA at eBay

+ Product Facets

(2001 - 2005)

Clothing, Shoes & Accessories

Shoes

- Women's Shoes
 - Style (Boots, Pumps, Sandals...)
 - Size (6, 6.5, 7, 7.5...)
 - Color (Black, Red, Tan...)
 - Condition (New, Used...)

Issues with approach:

- Encourages over-constrained queries (Values "ANDED" together)
- Placing facets behind dropdowns reduces the exposure of the values to the user
- Left-Navigation Placement is only used a minority of the time by users
- While effective within a product domain their still is a need for facets above that level

Ex: Everything Coach makes that is Red.

89

Evolution of IA at eBay

Faceted Metadata

(May 2005 Magellan Test)

Clothing, Shoes & Accessories

Shoes

- Women's Shoes
 - Style (Boots, Pumps, Sandals...)
 - Size (6, 6.5, 7, 7.5...)
 - Color (Black, Red, Tan...)
 - Condition (New, Used...)
 - Brand (Nine West, Coach...)

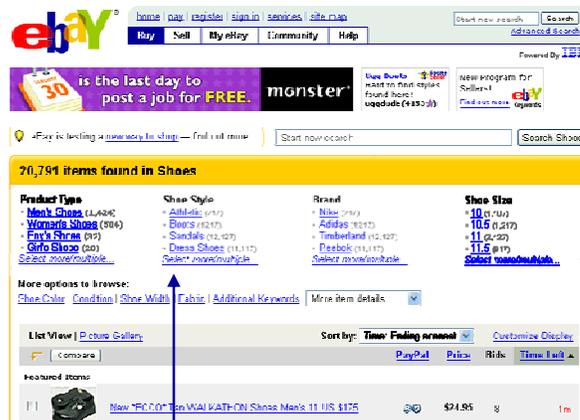
Brands

- Coach
- Louis Vuitton

Materials

- Cotton
- Leather

Added Hierarchical Facets



Moved to a Top Positioned Link Structure

90

[home](#) [buy](#) [register](#) [sign in](#) [services](#) [site map](#)

[Buy](#) [Sell](#) [My eBay](#) [Community](#) [Help](#) [Advanced Search](#)

is the last day to post a job for **FREE**. **monster**

eBay is testing a [new way to shop](#) — find out more.

3,424 Items found in Shoes

Product Type: [Cancel](#) [Cancel](#) [Cancel](#)
 Men's shoes

Shoe Style
 - Athletic (1,434)
 - Boots (704)
 - Casual Shoes (922)
 - Dress Shoes (120)
[Select more/multiple](#)

Brand
 - Nike (924)
 - Adidas (804)
 - Timberland (622)
 - **Reebok (490)**
[Select more/multiple](#)

Shoe Size
 - 10 (1,197)
 - 10.5 (1,217)
 - 11 (1,197)
 - 11.5 (817)
[Select more/multiple](#)

Condition
 - New, in box (3,424)
 - New, without box (2,700)
 - Used (1,322)
[Select more/multiple](#)

More options to browse:
[Shoe Width](#) | [Fabric](#) | [Price Range](#) | [Buying Options](#) | [Additional Keywords](#)

List View | [Picture Gallery](#) Sort by: **Time Ending soonest** [Customize Display](#)
 PayPal Price Bids Time Left

Featured Items

Image	Title	Price	Quantity	Time Left
	New "ECCO" Tan WALKATHON Shoes Men's 11 US \$176	\$24.95	1	17m

Matching items

Image	Title	Price	Quantity	Time Left
	Five Comfort Men's Shoes Sz 4-12	\$9.95	6	21m
	New Nike Men's DR-FIT TW Cap Toe 7 M Black Golf Shoes	\$18.95	2	8m

93

[home](#) [buy](#) [register](#) [sign in](#) [services](#) [site map](#)

[Buy](#) [Sell](#) [My eBay](#) [Community](#) [Help](#) [Advanced Search](#)

is the last day to post a job for **FREE**. **monster**

eBay is testing a [new way to shop](#) — find out more.

3,424 items found in Shoes

Product Type: [Cancel](#) [Cancel](#) [Cancel](#)
 Men's shoes

Popular Brands (74 of 87)

<input type="checkbox"/> Nike (924)	<input type="checkbox"/> Prada (400)	<input type="checkbox"/> Abercrombie (475)	<input type="checkbox"/> Laniste (401)
<input type="checkbox"/> Adidas (804)	<input type="checkbox"/> Banana Republic (590)	<input type="checkbox"/> Clarks (453)	<input type="checkbox"/> Adia (400)
<input type="checkbox"/> Timberland (622)	<input type="checkbox"/> Gap (514)	<input type="checkbox"/> Digo (117)	<input type="checkbox"/> Hugo Boss (355)
<input type="checkbox"/> Reebok (490)	<input type="checkbox"/> Aeropostale (510)	<input type="checkbox"/> BSW (104)	<input type="checkbox"/> Hugh Burgess (194)
<input type="checkbox"/> Skechers (611)	<input type="checkbox"/> Pump (500)	<input type="checkbox"/> Bandolino (420)	<input type="checkbox"/> Polo Form (320)
<input type="checkbox"/> Gucci (418)	<input type="checkbox"/> Armani Exchange (184)	<input type="checkbox"/> Ecco (418)	<input type="checkbox"/> See all Brands...

List View | [Picture Gallery](#) Sort by: **Time Ending soonest** [Customize Display](#)
 PayPal Price Bids Time Left

Featured Items

Image	Title	Price	Quantity	Time Left
	New "ECCO" Tan WALKATHON Shoes Men's 11 US \$176	\$24.95	1	17m

Matching items

Image	Title	Price	Quantity	Time Left
	Five Comfort Men's Shoes Sz 4-12	\$9.95	6	21m
	New Nike Men's DR-FIT TW Cap Toe 7 M Black Golf Shoes	\$18.95	2	8m

94

[home](#) [buy](#) [register](#) [sign in](#) [services](#) [site map](#) [Advanced Search](#)
[Buy](#) [Sell](#) [My eBay](#) [Community](#) [Help](#)

is the last day to post a job for **FREE**. **monster** View Books hard to find original Found Here! 1999duke(419338) New Program for Sellers! Find out more! **eBay** keywords

eBay is testing a **new way to shop** — find out more!

3,424 items found in Shoes

Product Type Color
 Men's shoes

Popular Brands (69 of 69)

<input type="checkbox"/> Abercrombie (475)	<input type="checkbox"/> Enders (419)	<input type="checkbox"/> Menslow (9)	<input type="checkbox"/> Reebok (621)
<input type="checkbox"/> Adidas (604)	<input type="checkbox"/> FOUK (9)	<input type="checkbox"/> Nike (924)	<input type="checkbox"/> Skechers (612)
<input type="checkbox"/> Ajin (499)	<input type="checkbox"/> Gap (277)	<input type="checkbox"/> Nickers (117)	<input type="checkbox"/> Sliders (917)
<input type="checkbox"/> Alloy (28)	<input type="checkbox"/> Lacoste (407)	<input type="checkbox"/> Old Navy (14)	<input type="checkbox"/> Timberland (622)
<input type="checkbox"/> Aeropostale (577)	<input type="checkbox"/> Golden Runners (924)	<input type="checkbox"/> Orinoco (25)	<input type="checkbox"/> Ugg (147)
<input type="checkbox"/> Armani Exchange (494)	<input type="checkbox"/> Hugoboss (204)	<input type="checkbox"/> PG Smallface (93)	
<input type="checkbox"/> Banana Republic (611)	<input type="checkbox"/> Hush Huggies (204)	<input type="checkbox"/> Phat Farm (353)	
<input type="checkbox"/> Bandolino (120)	<input type="checkbox"/> Inglis (49)	<input type="checkbox"/> Tadpo (247)	
<input type="checkbox"/> Blinked (46)	<input type="checkbox"/> Jenkins (11)	<input type="checkbox"/> Puma (201)	
<input type="checkbox"/> Clarks (493)	<input type="checkbox"/> Kickers (449)	<input type="checkbox"/> Reberns (917)	
<input type="checkbox"/> Diesel (916)	<input type="checkbox"/> Lacoste (407)	<input type="checkbox"/> Reisner (97)	
<input type="checkbox"/> Ecco (419)	<input type="checkbox"/> Matis (419)	<input type="checkbox"/> Rainwear (917)	

List View | [Picture Gallery](#) Sort by: **Time Ending soonest** [Customize Display](#)
 [PayPal](#) [Price](#) [Bids](#) [Time Left](#)

Featured Items

	\$24.95	8	1m
--	---------	---	----

Optimize your calling success! Find out how to [optimize](#)

Matching items

	\$2.25	6	2m
	\$49.95	2	3m

95

[home](#) [buy](#) [register](#) [sign in](#) [services](#) [site map](#) [Advanced Search](#)
[Buy](#) [Sell](#) [My eBay](#) [Community](#) [Help](#)

is the last day to post a job for **FREE**. **monster** View Books hard to find original Found Here! 1999duke(419338) New Program for Sellers! Find out more! **eBay** keywords

eBay is testing a **new way to shop** — find out more!

3,424 items found in Shoes

Product Type Color
 Men's shoes

Popular Brands (69 of 69)

<input type="checkbox"/> Abercrombie (475)	<input type="checkbox"/> Enders (419)	<input type="checkbox"/> Menslow (9)	<input checked="" type="checkbox"/> Reebok (621)
<input type="checkbox"/> Adidas (604)	<input type="checkbox"/> FOUK (9)	<input checked="" type="checkbox"/> Nike (924)	<input type="checkbox"/> Skechers (612)
<input type="checkbox"/> Ajin (499)	<input type="checkbox"/> Gap (277)	<input type="checkbox"/> Nickers (117)	<input type="checkbox"/> Sliders (917)
<input type="checkbox"/> Alloy (28)	<input type="checkbox"/> Lacoste (407)	<input type="checkbox"/> Old Navy (14)	<input type="checkbox"/> Timberland (622)
<input type="checkbox"/> Aeropostale (577)	<input type="checkbox"/> Golden Runners (924)	<input type="checkbox"/> Orinoco (25)	<input type="checkbox"/> Ugg (147)
<input type="checkbox"/> Armani Exchange (494)	<input type="checkbox"/> Hugoboss (204)	<input type="checkbox"/> PG Smallface (93)	
<input type="checkbox"/> Banana Republic (611)	<input type="checkbox"/> Hush Huggies (204)	<input type="checkbox"/> Phat Farm (353)	
<input type="checkbox"/> Bandolino (120)	<input type="checkbox"/> Inglis (49)	<input type="checkbox"/> Tadpo (247)	
<input type="checkbox"/> Blinked (46)	<input type="checkbox"/> Jenkins (11)	<input type="checkbox"/> Puma (201)	
<input type="checkbox"/> Clarks (493)	<input type="checkbox"/> Kickers (449)	<input type="checkbox"/> Reberns (917)	
<input type="checkbox"/> Diesel (916)	<input type="checkbox"/> Lacoste (407)	<input type="checkbox"/> Reisner (97)	
<input type="checkbox"/> Ecco (419)	<input type="checkbox"/> Matis (419)	<input type="checkbox"/> Rainwear (917)	

List View | [Picture Gallery](#) Sort by: **Time Ending soonest** [Customize Display](#)
 [PayPal](#) [Price](#) [Bids](#) [Time Left](#)

Featured Items

	\$24.95	8	1m
--	---------	---	----

Optimize your calling success! Find out how to [optimize](#)

Matching items

	\$2.25	6	2m
	\$49.95	2	3m

96

[home](#) | [buy](#) | [register](#) | [sign in](#) | [services](#) | [site map](#) |

[Buy](#) | [Sell](#) | [My eBay](#) | [Community](#) | [Help](#)

is the last day to post a job for **FREE**. **monster**

eBay is testing a [new way to shop](#) — find out more.

1,543 items found in Shoes

Product Type: [Cancel](#) [Men's shoes](#) | Color: [Cancel](#) [Black](#) | Brand: [Cancel](#) [Nike, Reebok](#)

Shoe Style
[Athletic](#) (924)
[Boots](#) (40)
[Casual Shoes](#) (27)
[Dress Shoes](#) (10)
[Select more/multiple...](#)

Shoe Size
[10](#) (207)
[10.5](#) (817)
[11](#) (17)
[11.5](#) (117)
[Select more/multiple...](#)

Condition
[New, in box](#) (1,003)
[New, without box](#) (500)
[Used](#) (40)
[Select multiple...](#)

Shoe Width
[Regular](#) (207)
[Wide 1](#) (117)
[Wide 2](#) (110)
[Wide 3](#) (0)
[Select more/multiple...](#)

More options to browse:
[Fabric](#) | [Price Range](#) | [Colors/Options](#) | [Additional Keywords](#)

List View | [Picture Gallery](#) | Sort by: **Time Ending soonest** | [Customize Display](#)

[PayPal](#) | [Price](#) | [Bids](#) | [Time Left](#)

Featured items:

Image	Title	Price	Bids	Time Left
	New ECCO Tan WALKATHON Shoes Men's 11 US \$175	\$24.95	0	17m

Customize your ending auction! Find out how to [customize your ending](#).

Matching items

Image	Title	Price	Bids	Time Left
	Five Comfort Men's Shoes Sz 4-12	\$9.99	6	27m
	New Nike Men's DR.FIT™ Cap Toe 7 M Black Golf Shoes	\$18.95	2	87m

97

[home](#) | [buy](#) | [register](#) | [sign in](#) | [services](#) | [site map](#) |

[Buy](#) | [Sell](#) | [My eBay](#) | [Community](#) | [Help](#)

is the last day to post a job for **FREE**. **monster**

eBay is testing a [new way to shop](#) — find out more.

5,104 items found in Shoes

Product Type: [Cancel](#) [Men's shoes](#) | Brand: [Cancel](#) [Nike, Reebok](#)

Shoe Color
[Black](#) (1,424)
[Brown](#) (1,004)
[Gray](#) (612)
[White](#) (720)
[Select more/multiple...](#)

Shoe Style
[Athletic](#) (924)
[Boots](#) (40)
[Casual Shoes](#) (27)
[Dress Shoes](#) (10)
[Select more/multiple...](#)

Shoe Size
[10](#) (207)
[10.5](#) (817)
[11](#) (17)
[11.5](#) (117)
[Select more/multiple...](#)

Condition
[New, in box](#) (1,003)
[New, without box](#) (500)
[Used](#) (40)
[Select multiple...](#)

More options to browse:
[Fabric](#) | [Price Range](#) | [Colors/Options](#) | [Additional Keywords](#)

List View | [Picture Gallery](#) | Sort by: **Time Ending soonest** | [Customize Display](#)

[PayPal](#) | [Price](#) | [Bids](#) | [Time Left](#)

Featured items:

Image	Title	Price	Bids	Time Left
	New ECCO Tan WALKATHON Shoes Men's 11 US \$175	\$24.95	0	17m

Customize your ending auction! Find out how to [customize your ending](#).

Matching items

Image	Title	Price	Bids	Time Left
	Five Comfort Men's Shoes Sz 4-12	\$9.99	6	27m
	New Nike Men's DR.FIT™ Cap Toe 7 M Black Golf Shoes	\$18.95	2	87m

98

[home](#) [buy](#) [register](#) [sign in](#) [services](#) [site map](#)

[Buy](#) [Sell](#) [My eBay](#) [Community](#) [Help](#)

is the last day to post a job for **FREE**. **monster**

eBay is testing a [new way to shop](#) — find out more.

Start new search

5,104 Items found in Shoes

Product Type: [Cancel](#) [Women's shoes](#) Brand: [Cancel](#) [Nike, Reebok](#)

Shoe Color
 - [Black](#) (1,434)
 - [Brown](#) (1,004)
 - [Gray](#) (922)
 - [White](#) (723)
[Select more/multiple](#)

Shoe Style
 - [Athletic](#) (924)
 - [Boats](#) (40)
 - [Casual Shoes](#) (195)
 - [Dress Shoes](#) (43)
[Select more/multiple](#)

Shoe Size
 - [10](#) (607)
 - [10.5](#) (917)
 - [11](#) (622)
 - [11.5](#) (417)
[Select more/multiple](#)

Condition
 - [New, in box](#) (1,003)
 - [New, without box](#) (500)
 - [Used](#) (40)
[Select multiple](#)

More options to browse:
[Fabric](#) | [Price Range](#) | [Colors/Options](#) | [Additional Keywords](#)

List View | [Picture Gallery](#) Sort by: **Time Ending soonest** [Customize Display](#)

[PayPal](#) [Price](#) [Bids](#) [Time Left](#)

Featured Items

	New ECCO Top WALKATHON Shoes Men's 11 US \$175	\$24.95	0	1m
--	--	---------	---	----

Customise your listing: [cancel](#) [find out how to](#) [customize your listing](#)

Matching items

	Fine Comfort Men's Shoes Sz 10	\$9.99	8	2m
	New Nike Men's DE-FIT™ Club Ties 7-11 Black Golf Shoes	\$16.95	2	9m

99

[home](#) [buy](#) [register](#) [sign in](#) [services](#) [site map](#)

[Buy](#) [Sell](#) [My eBay](#) [Community](#) [Help](#)

is the last day to post a job for **FREE**. **monster**

eBay is testing a [new way to shop](#) — find out more.

Start new search

442 Items found in Shoes

Color: [Cancel](#) [Brown](#) Brand: [Cancel](#) [Nike](#) Product Type: [Cancel](#) [Women's shoes](#)

Shoe Style
 - [Heels](#) (344)
 - [Boats](#) (40)
 - [Casual Shoes](#) (29)
 - [Dress Shoes](#) (40)
[Select more/multiple](#)

Shoe Size
 - [7](#) (60)
 - [7.5](#) (80)
 - [8](#) (100)
 - [8.5](#) (80)
[Select more/multiple](#)

Condition
 - [New, in box](#) (310)
 - [New, without box](#) (142)
[Select multiple](#)

Shoe Width
 - [Regular](#) (500)
 - [Wide 1](#) (17)
 - [Wide 2](#) (12)
 - [Wide 3](#) (0)
[Select more/multiple](#)

More options to browse:
[Fabric](#) | [Price Range](#) | [Colors/Options](#) | [Additional Keywords](#)

List View | [Picture Gallery](#) Sort by: **Time Ending soonest** [Customize Display](#)

[PayPal](#) [Price](#) [Bids](#) [Time Left](#)

Featured Items

	New ECCO Top WALKATHON Shoes Men's 11 US \$175	\$24.95	0	1m
--	--	---------	---	----

Customise your listing: [cancel](#) [find out how to](#) [customize your listing](#)

Matching items

	Fine Comfort Men's Shoes Sz 10	\$9.99	6	2m
	New Nike Men's DE-FIT™ Club Ties 7-11 Black Golf Shoes	\$16.95	2	9m

100

[home](#) | [buy](#) | [register](#) | [sign in](#) | [services](#) | [site map](#) | [Advanced Search](#)
[Buy](#) | [Sell](#) | [My eBay](#) | [Community](#) | [Help](#)

is the last day to post a job for **FREE**. **monster**
[Show Results](#) [New Program for Sellers](#)
 Found item: [ugg boots \(41333\)](#) [Find out more](#)

eBay is testing a [new way to shop](#) — find out more |

344 items found in Shoes
 Color: [brown](#) | Brand: [Prada](#) | Product Type: [Women's Shoe](#) | Shoe Style: [Moccasin](#)

Heel Height
[0.6 inch \(80\)](#)
[1 inch \(70\)](#)
[1.5 inches \(4,000\)](#)
[2 inches \(400\)](#)
[Select more/multiple](#)

Shoe Size
[7 \(80\)](#)
[7.5 \(80\)](#)
[8 \(70\)](#)
[8.5 \(80\)](#)
[Select more/multiple](#)

Condition
[New in box \(210\)](#)
[New, without box \(144\)](#)
[Select more/multiple](#)

Shoe Width
[Regular \(680\)](#)
[Wide 1 \(17\)](#)
[Wide 2 \(12\)](#)
[Wide 3 \(0\)](#)
[Select more/multiple](#)

More options to browse:
[Fabric](#) | [Price Range](#) | [Brand](#) | [Color](#) | [Additional Keywords](#)

List View | [Picture Gallery](#) | Sort by: [Time Ending soonest](#) | [Customize Display](#)
 [PayPal](#) | [Price](#) | [Bids](#) | [Time Left](#)

Featured Items
 Customize your ending auction! Find out how to [customize your ending](#).

Matching items

	New "ECCO" Tan WALKATHON Shoes Men's 11 US \$175	\$24.86	1m
	Puma Comfort Men's Shoes Sz 4E	\$9.95	2m
	New Nike Men's Dr. FETW Cap Top 7.5 M Black Golf Shoes	\$80.00	6m

101

[home](#) | [buy](#) | [register](#) | [sign in](#) | [services](#) | [site map](#) | [Advanced Search](#)
[Buy](#) | [Sell](#) | [My eBay](#) | [Community](#) | [Help](#)

is the last day to post a job for **FREE**. **monster**
[Show Results](#) [New Program for Sellers](#)
 Found item: [ugg boots \(41333\)](#) [Find out more](#)

eBay is testing a [new way to shop](#) — find out more |

344 items found in Shoes
 Color: [brown](#) | Brand: [Prada](#) | Product Type: [Women's Shoe](#) | Shoe Style: [Moccasin](#)

Additional Keywords

List View | [Picture Gallery](#) | Sort by: [Time Ending soonest](#) | [Customize Display](#)
 [PayPal](#) | [Price](#) | [Bids](#) | [Time Left](#)

Featured Items
 Customize your ending auction! Find out how to [customize your ending](#).

Matching items

	New "ECCO" Tan WALKATHON Shoes Men's 11 US \$175	\$24.86	1m
	Puma Comfort Men's Shoes Sz 4E	\$9.95	2m
	New Nike Men's Dr. FETW Cap Top 7.5 M Black Golf Shoes	\$80.00	6m

102

[home](#) | [buy](#) | [register](#) | [sign in](#) | [services](#) | [site map](#) | [Advanced Search](#)
[Buy](#) | [Sell](#) | [My eBay](#) | [Community](#) | [Help](#)

is the last day to post a job for **FREE**. **monster**
[Use Boots](#) | [New Program for Sellers](#) | [Find out more](#)

eBay is testing a [new way to shop](#) — find out more.

344 items found in Shoes
 Color: [Cancel](#) | Brand: [Cancel](#) | Product Type: [Cancel](#) | Shoe Style: [Cancel](#)
 Brown | Prada | Women's Shoe | High

Additional Keywords

List View | [Picture Gallery](#) | Sort by: [Time Ending soonest](#) | [Customize Display](#)
 [PayPal](#) | [Price](#) | [Bids](#) | [Time Left](#)

Matching items

Image	Title	Price	Condition	Time Left
	New ECCO Top WALKATHON Shoes Men's 11 US \$ 75	\$74.95	1m	1m
	New Comfort Men's Shoes \$2.95	\$2.95	2m	2m
	New Nike Men's Air Max 273 Casual Shoes	\$169.95	5m	5m

103

[home](#) | [buy](#) | [register](#) | [sign in](#) | [services](#) | [site map](#) | [Advanced Search](#)
[Buy](#) | [Sell](#) | [My eBay](#) | [Community](#) | [Help](#)

is the last day to post a job for **FREE**. **monster**
[Use Boots](#) | [New Program for Sellers](#) | [Find out more](#)

eBay is testing a [new way to shop](#) — find out more.

14 items found in Shoes
 Color: [Cancel](#) | Brand: [Cancel](#) | Product Type: [Cancel](#) | Shoe Style: [Cancel](#) | Keywords: [Cancel](#)
 Brown | Prada | Women's Shoe | High | comfortable

Heel Height
 - 1 inch (4)
 - 2 inches (9)
 - 3 inches (9)
[Select more/multiple...](#)

Shoe Size
 - Low
 - **7.5 (6)**
 - 8 (7)
 - 8.5 (8)
[Select more/multiple...](#)

Condition
 - New, in box (11)
 - New, without box (4)
[Select multiple...](#)

Shoe Width
 - Regular (60)
 - Wide 1 (17)
[Select multiple...](#)

More options to narrow:
[Fabric](#) | [Price Range](#) | [Colors/Options](#) | [Additional Keywords](#)

List View | [Picture Gallery](#) | Sort by: [Time Ending soonest](#) | [Customize Display](#)
 [PayPal](#) | [Price](#) | [Bids](#) | [Time Left](#)

Matching items

Image	Title	Price	Condition	Time Left
	New ECCO Top WALKATHON Shoes Men's 11 US \$ 75	\$74.95	1m	1m
	New Comfort Men's Shoes \$2.95	\$2.95	2m	2m
	New Nike Men's Air Max 273 Casual Shoes	\$169.95	5m	5m

104

The screenshot shows the eBay website interface for a shoe search. At the top, there's a navigation bar with the eBay logo and links for home, buy, sell, my eBay, community, and help. Below this are promotional banners for Monster.com and a new program for sellers. The main content area displays search results for 'Shoes' with filters for color, brand, product type, shoe style, keywords, and size. It also includes a 'More options to browse' section with links for heel height, condition, fabric, price range, and additional keywords. The search results are sorted by 'Time Ending soonest' and show a list of items with their titles, prices, and shipping options. A 'Matching items' section is also visible below the main results.

105

Latest eBay design is now live!

- Try multi-faceted search yourself with the launch of eBay Express in Spring 2006.

See <http://express.ebay.com> for details.

106

Methodology

Qualitative:

- Rapid Iterative Testing & Evaluation (RITE) Method (2 days testing, 1 day to iterate design)
- n = 48 users (over 9 months)
- 10 versions of the design
- 3 domains: Shoes, TVs, and Collective Glass

Quantitative:

- A/B Test on the live site for 3 weeks
[n = 73k searches in test environment compared to current site]

107

Lessons Learned at eBay

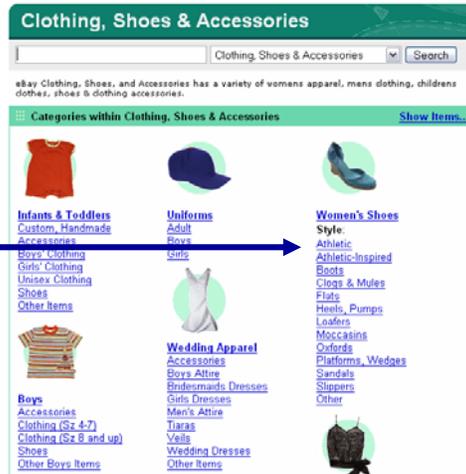
- Data Design
 - Facets
 - Flexibility of Facets vs. Hierarchy
 - Dependencies
- Presentation
 - Integrating “browse” and “search”
 - Control Placement
 - Facet Presentation
 - Breadcrumbs

108

Facets

Lesson: Users desire facets above the domain

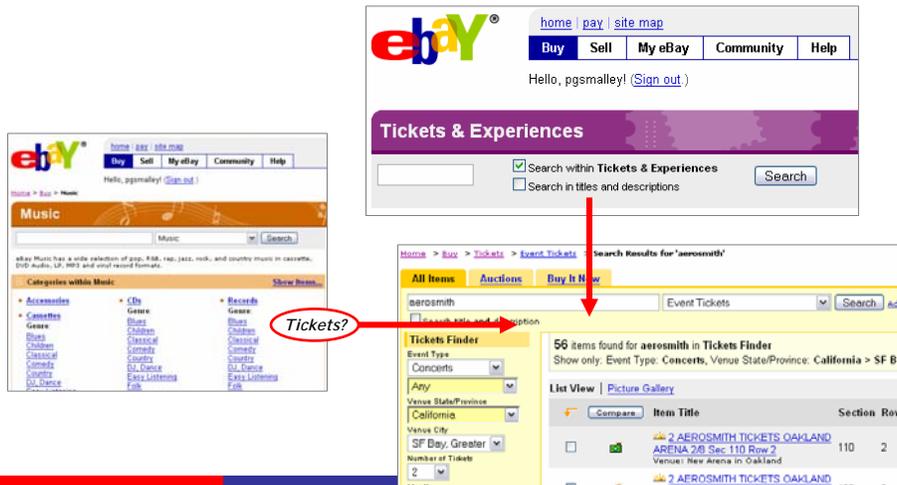
Users also want...
Brands (Coach, Louis Vuitton)
Materials (Leather, Cotton)



109

Flexibility of Facets vs. Hierarchy

Lesson: Users expect multiple entry points into a domain (tickets under sports)



110

Dependencies

Lesson: Users understand result of removing a parent facet (dependent facets also removed)

20,791 items found in Shoes

Shoe Style: **Athletic** (Cancel) Shoe Sub Style: **baseball** (Cancel)

Product Type: [Men's Shoes](#) (3,424) | [Women's Shoes](#) (504) | [Boy's Shoes](#) (92) | [Girls' Shoes](#) (20) | [Select more/multiple...](#)

Shoe Size: [10](#) (1,107) | [10.5](#) (1,077) | [11](#) (2,427) | [11.5](#) (017) | [Select more/multiple...](#)

Brand: [Nike](#) (217) | [Adidas](#) (127) | [Timberland](#) (12,127) | [Reebok](#) (11,117) | [Select more/multiple...](#)

Buying Options: [Buy it Now](#) (1,204) | [PayPal](#) (804) | [Listed in the US](#) (32) | [Ship internationally](#) (88) | [Select more/multiple...](#)

More options to browse: [Shoe Color](#) | [Condition](#) | [Shoe Width](#) | [Fabric](#) | [Additional Keywords](#) |

List View | [Picture Gallery](#) | Sort by: **Time: Ending soonest** | [Customize Display](#)

[Compare](#) | [PayPal](#) | [Price](#) | [Bids](#) | [Time Left](#)

Featured Items

<input type="checkbox"/>		175	224.95	0	1...
--------------------------	--	-----	--------	---	------

111

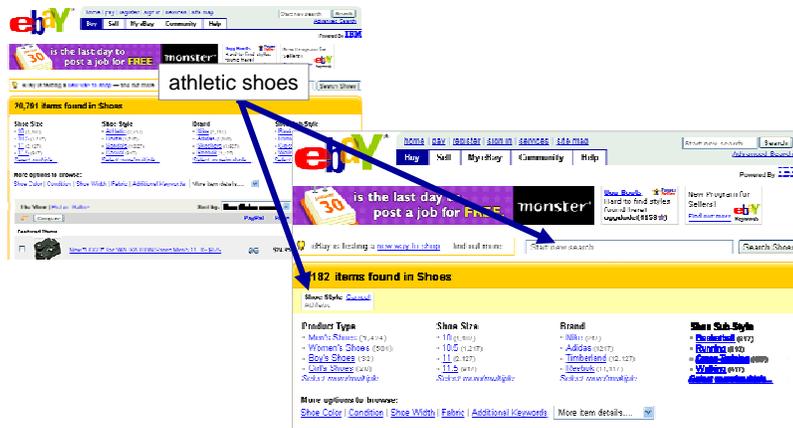
Lessons Learned at eBay

- Data Design
 - ✓ Facets
 - ✓ Flexibility of Facets vs. Hierarchy
 - ✓ Dependencies
- Presentation
 - Integrating "browse" and "search"
 - Control Placement
 - Facet Presentation
 - Breadcrumbs

112

Integrating "browse" and "search"

Lesson: "Parsing" feels natural to users (and the text in the search box is not sacred)



113

Integrating "browse" and "search"

Lesson: People browse using the facets more when they are not familiar with the domain



114

Control Placement

Lesson: Controls placed along the top of the page are used more than when on the left side

The image shows two side-by-side screenshots of the eBay website. The left screenshot shows search results for 'Women's Shoes' with search filters on the left side. The right screenshot shows the same search results but with search filters placed at the top of the page. A red circle highlights the top filters, and a blue arrow points from the left filters to the top filters, indicating that top placement leads to higher usage.

115

Facet Presentation

Lesson: Users stop using refinements when a) not useful, and b) item count low enough

The image shows two side-by-side screenshots of the eBay website. The left screenshot shows search results for 'Shoes' with search filters on the left side and a high item count of 15,460. The right screenshot shows the same search results but with search filters placed at the top and a significantly lower item count of 7. This illustrates how a low item count can lead to users stopping the use of refinements.

116

Facet Presentation

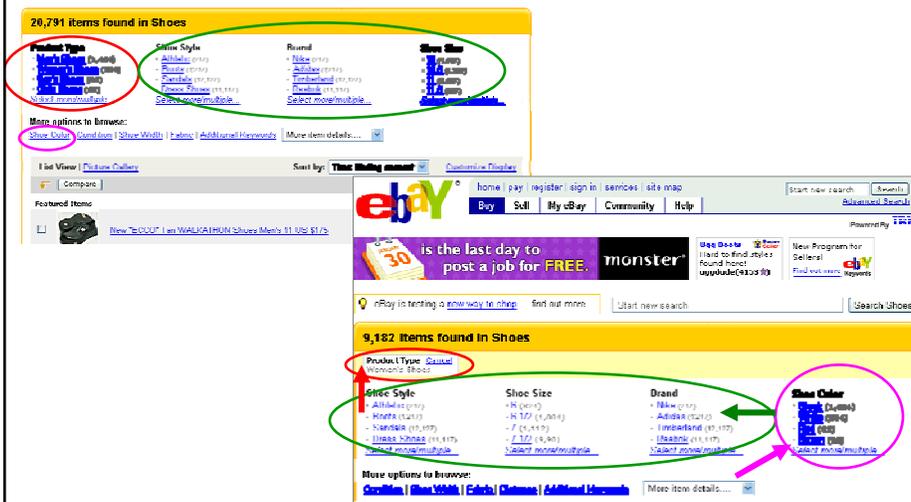
Lesson: Prominently showing 4 facets is sufficient (but prioritization is important)



117

Facet Presentation

Lesson: Shifting columns doesn't disturb people



118

Facet Presentation

Lesson: Truncated list of values per facet is okay (users know how to access the rest)

The screenshot shows the eBay search interface for 'Shoes'. The search results are filtered to 20,791 items. The facets are:

- Product Type:** Men's Shoes (1,400), Women's Shoes (804), Kids' Shoes (98), Girls' Shoes (88), [Select more/multiple...](#)
- Shoe Style:** Athletic (217), Boots (1,217), Sandals (2,127), **Slippers (11,177)** (circled in red), [Select more/multiple...](#)
- Brand:** Nike (217), Adidas (1,517), Timberland (12,127), Teckels (1,117), [Select more/multiple...](#)
- Shoe Size:** 11 (1,007), 13.5 (1,047), 11.5 (977), 11.8 (977), [Select more/multiple...](#)

More options to browse: Shoe Color | Condition | Shoe Width | Fabric | Additional Keywords | More item details...

119

Facet Presentation

Lesson: Showing sample values help users understand facets and can expose breadth

The screenshot shows the eBay search interface for 'Shoes'. The search results are filtered to 20,791 items. The facets are:

- Product Type:** **Men's Shoes** (selected), [Cancel](#)
- Popular Brands (24 of 69):**
 - Nike (2,117)
 - Adidas (2,017)
 - Timberland (2,007)
 - Reebok (1,917)
 - Skechers (1,827)
 - Gucci (1,727)
 - Prada (1,627)
 - Banana Republic (1,627)
 - Gap (1,482)
 - Aeropostale (1,327)
 - Puma (1,227)
 - Armani Exchange (1,127)
 - Abercrombie (1,107)
 - Clarks (1,001)
 - Ugg (967)
 - RSVP (815)
 - Bandolung (814)
 - Ecco (813)
 - Lacoste (768)
 - Adio (755)
 - Hugo Boss (748)
 - Hush Puppies (668)
 - Phat Farm (456)

[See all Brands...](#)

Go [Cancel](#)

120

Facet Presentation

Lesson: Users often want to select multiple facet labels and are pleased when they can (treated as an OR by search engine)

20,791 items found in Shoes

Product Type [Cancel](#)
Men's Shoes

Popular Brands (24 of 69)

- | | | | |
|---|--|--|---|
| <input type="checkbox"/> Nike (2,117) | <input type="checkbox"/> Prada (1,827) | <input type="checkbox"/> Abercrombie (1,107) | <input type="checkbox"/> Lacoste (768) |
| <input type="checkbox"/> Adidas (2,017) | <input type="checkbox"/> Banana Republic (1,527) | <input type="checkbox"/> Clarks (1,001) | <input type="checkbox"/> Adio (755) |
| <input type="checkbox"/> Timberland (2,007) | <input type="checkbox"/> Gap (1,4827) | <input type="checkbox"/> Ugg (957) | <input type="checkbox"/> Hugo Boss (748) |
| <input type="checkbox"/> Reebok (1,917) | <input type="checkbox"/> Aeropostale (1,327) | <input type="checkbox"/> RSVP (815) | <input type="checkbox"/> Hush Puppies (668) |
| <input type="checkbox"/> Skechers (1,827) | <input type="checkbox"/> Puma (1,227) | <input type="checkbox"/> Bandolino (814) | <input type="checkbox"/> Phat Farm (455) |
| <input type="checkbox"/> Gucci (1,727) | <input type="checkbox"/> Armani Exchange (1,127) | <input type="checkbox"/> Ecco (813) | See all Brands... |

[Cancel](#)

121

Breadcrumbs

Lesson: Traditional breadcrumbs don't work here

~~[Shoes](#) > [\\$50 - \\$60](#) > [Shoebuy.com](#) > [Women](#)~~

20,791 items found in Shoes

Product Type [Cancel](#) Shoe Width [Cancel](#)
Men's Shoes Regular, Wide

- | | | |
|---|---|---|
| Shoe Size <ul style="list-style-type: none">+ 10 (1,107)+ 10.5 (1,217)+ 11 (2,127)+ 11.5 (917)Select multiple... | Shoe Style <ul style="list-style-type: none">+ Athletic (2,117)+ Boots (1,217)+ Sandals (1,027)+ Casual (917)Select more/multiple... | Bran <ul style="list-style-type: none">+ Niki+ Adic+ Ske+ ReeSelec |
|---|---|---|

122

Breadcrumbs

Lesson: Users understand the idea of applying and removing facets using this modified breadcrumb without instruction

The screenshot shows the eBay search results page for 'Shoes'. At the top, there is a navigation bar with links for 'home', 'buy', 'sell', 'register', 'sign in', 'services', 'site map', and 'Advanced Search'. Below this, there are several promotional banners, including one for 'monster' and another for 'ugg Boots'. The main search results section is titled '20,791 items found in Shoes'. Underneath, there are four facet categories: 'Shoe Size', 'Shoe Style', 'Brand', and 'Shoe Sub-Style'. Each category has a list of options with counts. The 'Shoe Size' facet is highlighted with a red circle, and the 'Shoe Width' facet is also highlighted with a red circle. The 'Shoe Size' options are: 10 (1,107), 11 (2,127), and 12 (917). The 'Shoe Style' options are: Athletic (2,117), Boots (1,217), Sandals (1,027), and Casual (917). The 'Brand' options are: Nike (2,117), Adidas (2,010), Skechers (1,927), and Reebok (1,127). The 'Shoe Sub-Style' options are: Basketball (917), Running (810), Cross-Training (427), and Walking (417). At the bottom of the facets, there is a section for 'More options to browse:' with links for 'Shoe Color', 'Condition', 'Shoe Width', 'Fabric', 'Additional Keywords', and 'More item details...'. The number '123' is visible in the bottom right corner of the screenshot.

Lessons Learned at eBay

- Data Design
 - ✓ Facets
 - ✓ Flexibility of Facets vs. Hierarchy
 - ✓ Dependencies
- Presentation
 - ✓ Integrating "browse" and "search"
 - ✓ Control Placement
 - ✓ Facet Presentation
 - ✓ Breadcrumbs

Discussion and Q&A

- Your chance to make a comment on the subject or ask a question of the presenters.

Marti Hearst
School of Information
UC Berkeley

Preston Smalley & Corey Chandler
User Experience & Design
eBay Marketplaces

125

Acknowledgements

- Flamenco Team
 - Brycen Chun, Ame Elliott, Jennifer English, Kevin Li, Rashmi Sinha, Emilia Stoica, Kirsten Swearingen, Ka-Ping Yee
 - This work supported in part by NSF (IIS-9984741)
- eBay Product Team
 - Corey Chandler, Sam Devins, Elaine Fung, Jean-Michel Leon, Michelle Millis, Louis Monier, Michael Morgan, Hill Nguyen, Kenny Pate, Melissa Quan, James Reffell, Suzanne Scott, Seema Shah, Preston Smalley, Anselm Baird-Smith, Luke Wroblewski

126