



# Taxonomies for E-Commerce

## Best practices and design challenges

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## About Heather Hedden

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- Continuing education online workshop instructor, Simmons College Graduate School of Library and Information Science
- Author of *The Accidental Taxonomist* (Information Today, Inc., 2010)
- Previously
  - employed taxonomy consultant
  - in-house taxonomy manager
  - publishing company vocabulary editor
  - taxonomist for enterprise search tool vendor
  - indexer

# Introduction to Taxonomies

## A Taxonomy...

- An authoritative, restricted list of terms/names/labels/categories
- Each term is for a single unambiguous concept
- Governed by policies for who, when, and how new terms can be added
- Arranged in some (hierarchical) structure or groupings
- Supports indexing/tagging/categorizing/metadata management of content
- Facilitates retrieval/findability in both browsing and searching

# Introduction to E-Commerce Taxonomies

Typical characteristics of retail/ecommerce taxonomies:

- Separate hierarchy for each department or broad product category.
  - Typically 5 – 20 top categories/hierarchies
  - Typical hierarchy depth of 3-4 levels
  - Typically 3 – 20 terms/subcategories per level
- May also have facets, typically at deeper hierarchy levels.
- Ordering is not always alphabetical, rather popular or logical.

# Hierarchies

**Walmart**  Save money. Live better.

12

**See All Departments**

- Electronics & Office >
- Movies, Music & Books >
- Home, Furniture & Patio >
- Apparel, Shoes & Jewelry >
- Baby & Kids >
- Toys & Video Games >
- Sports, Fitness & Outdoors >
- Auto & Home Improvement >
- Photo >
- Gifts, Craft & Party Supplies >
- Pharmacy, Health & Beauty >
- Grocery & Pets >

**BEST BUY**

Search by Keyword

14

**PRODUCTS** **SERVICES**

- TV & Home Theater
- Audio & MP3
- Mobile Phones & iPhones
- Cameras & Camcorders
- Computers & Tablets
- Car, Marine & GPS
- Office
- Health, Fitness & Sports
- Movies & Music
- Musical Instruments
- Video Games
- Toys & Games NEW!
- Home
- Appliances

**amazon** Join Prime

16

Shop by Department

- Unlimited Instant Videos
- MP3s & Cloud Player  
20 million songs, play anywhere
- Amazon Cloud Drive  
5 GB of free storage
- Kindle
- Appstore for Android  
Get Velocispider for free today
- Digital Games & Software
- Audible Audiobooks

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- Books
- Movies, Music & Games
- Electronics & Computers
- Home, Garden & Tools
- Grocery, Health & Beauty
- Toys, Kids & Baby
- Clothing, Shoes & Jewelry
- Sports & Outdoors
- Automotive & Industrial

**sears**

17

**Departments**


- Appliances
- Automotive & Tires
- Baby
- Beauty & Health
- Bed, Bath & Home
- Books & Magazines
- Clothing, Shoes & Jewelry
- Christmas & Gifts
- Electronics, TVs & Office
- Fashion
- Fitness & Sports
- Lawn & Garden
- Music, Movies & Gaming
- Outdoor Living
- Parts & Services
- Tools
- Toys

11+

 [women](#) [men](#) [baby](#) [kids](#) [home](#) [kitchen](#) [furniture](#) [electronics](#) [video games](#) [toys](#) [health & beauty](#) [christmas](#) [more](#)

# LANDS' END

10+

[Women](#) [Men](#) [Kids](#) [Gifts](#) [Swim](#) [Outerwear](#) [Shoes](#) [School](#) [For the Home](#) [Luggage](#) [Sale](#)  **LANDS' END** BUSINESS OUTFITTERS

**Departments**

- Appliances
- Automotive & Tires
- Baby**
- Beauty & Health
- Bed, Bath & Home
- Books & Magazines
- Clothing, Shoes & Jewelry

**Baby**

- Furniture
- Strollers & Car Seats
- Bedding
- Room Dècor
- Diapering
- Feeding
- Baby Registry

**Luggage Sale**

- Backpacks & Lunch Boxes
- Totes
- Duffel Bags
- Luggage Collections
- Carry-on Luggage
- Wheeled Luggage
- Upright Luggage
- Kids' Luggage
- Briefcases & Laptop Bags
- Toiletry Kits & Travel Accessories

women men baby kids home kitchen fur

**clothing**

- activewear
- blazers & jackets
- dresses
- intimates
- jeans
- outerwear
- pants
- sleepwear
- sweaters
- tops
- all clothing**

**shoes**

- boots
- flats
- heels & pumps
- slippers
- wedges
- all shoes**

**accessories**

- handbags
- hats, scarves & gloves
- jewelry
- socks & hosiery
- all accessories**

# Subcategories in Hierarchies

PRODUCTS SERVICES SHOPS & DEALS

**TV & Home Theater**

- Audio & MP3
- Mobile Phones & iPhones
- Cameras & Camcorders
- Computers & Tablets
- Car, Marine & GPS
- Office
- Health, Fitness & Sports
- Movies & Music
- Musical Instruments
- Video Games
- Toys & Games **MEUP**
- Home

TVs

- Smart TVs & Devices
- Projectors & Screens
- Blu-ray & DVD Players
- Home Theater Systems
- TV & Internet Service Providers
- TV Stands, Mounts & Storage
- TV & Home Theater Services
- Accessories

**Electronics & Office**

- Movies, Music & Books**
- Home, Furniture & Patio**
- Apparel, Shoes & Jewelry**
- Baby & Kids**
- Toys & Video Games**
- Sports, Fitness & Outdoors**
- Auto & Home Improvement**
- Photo**
- Gifts, Craft & Party Supplies**
- Pharmacy, Health & Beauty**
- Grocery & Pets**
- Cyber Week Specials**

**Electronics**

- Accessories
- Auto Electronics
- Cameras & Camcorders
- Cell Phones & Services
- Computers
- GPS & Navigation
- Home Audio & Theater
- iPad, Tablets & eReaders
- iPods & MP3 Players
- TV & Video
- Video Games
- Electronics Learning Center**

**Computers**

- Desktops
- Laptops
- Monitors
- Networking
- Printers & Supplies
- Tablet PCs
- See all

**Office**

- Breakroom Supplies
- Business Office Furniture
- Home Office Furniture
- Janitorial Supplies
- Office Supplies
- Office Technology
- Phones & Accessories
- Select Supplies

# Facets

## Facets

= Attributes = Dimensions = Refinements = Filters = Limit by

- Facets are for narrowing category sets that are similar and support the same kinds of attributes.
- Facets work well for retail products that are sufficiently similar: all shoes, all luggage, all laptop computers.
- Facets may:
  - be the only type of taxonomy on a specialized retail site
  - appear at lower (more specific) category hierarchy levels of a general retail site.
  - appear after executing a search

# Facets

## Advanced Search

Please select one or more dropdowns below and then click the **Search** button. The more selections you make, the fewer items will appear.

### Search Women's Shoes

Any Brand

Any Type

Any Category

Any Size

Any Width

Any Color

Any Heel Height

Any Country

Any Price

Search

### Search Men's Shoes

Rockport

Casual

Any Category

10

Regular

Brown

Imported

\$65 - \$100

Search

### Search Children's Shoes

Any Brand

Any Type

Any Category

Any Category

6 Inch

8 Inch

Active Sandals

Adjustable Strap Sandals

Adjustable Strap Shoes

Adjustable Width Sandals

Adjustable Width Shoes

After Sport Sandals

Airport Friendly Boots

Alpargatas

Amphibious Sandals

Animal Slippers

Ankle Strap Sandals

Ankle Straps

Aqua Socks

Athletic Shoes

Baby Bibs

Ballet Shoes

Ballroom Shoes

### OVER 1,400 BRANDS

[Aersoles](#)  
[Allen-Edmonds](#)  
[Anne Klein](#)  
[Birkenstock](#)

[Crocs](#)  
[Donald J Pliner](#)  
[Dr. Martens](#)  
[Easy Spirit](#)

[Johnston & Murphy](#)  
[K-Swiss](#)  
[Keds](#)  
[Keen](#)

[New Balance](#)  
[Patagonia](#)  
[Propet](#)  
[PUMA](#)



## Format

- Paperback (386,973)
- Hardcover (240,008)
- Kindle Edition (17,788)
- Audible Audio Edition (151)
- HTML (15,520)
- PDF (13,078)
- Audio CD (529)
- Board Book (296)
- Audio Cassette (413)
- Calendar (1,823)
- School Binding (481)
- MP3 CD (27)

## Author

### Any Author

- David S. Moore (525)
- Ron Larson (518)
- Charles Darwin (464)
- Margaret L. Lial (388)
- David Halliday (295)
- Deborah Hughes-Hallett (221)
- E. John Hornsby (219)
- > See more...

## Series

### Any Series

- Unleashed (94)
- Sams Teach Yourself (81)
- Apogee Books Space (56)
- Essentials (51)
- Mathstart (48)
- Oxford Logic Guides (46)
- Demystified (42)
- > See more...

## Shipping Option [\(What's this?\)](#)

### Any Shipping Option

- Free Super Saver Shipping

## Narrow Your Results

### Price

- \$200 - \$249.99 (2)
- \$250 - \$499.99 (8)
- \$500 - \$749.99 (19)
- \$750 - \$999.99 (17)
- \$1000 - \$1249 (2)
- \$1500 - \$1999 (1)

### Screen Size

- 17" and Up (1)
- 15" - 16" (9)
- 14" and Under (37)

### Processor Brand

- AMD (4)
- Intel® (45)

### System Memory RAM

- 1GB (1)
- 2GB (4)
- 4GB (31)
- 6GB (8)
- 8GB (4)
- 16GB (1)

### Laptop Features

- Touchscreen (4)
- Backlit Keyboard (13)
- Built-in Webcam (50)
- Blu-ray (2)
- HDMI Output (44)
- Wireless Capability (5)
- Wireless Display (15)
- Ultraportable (40)
- ENERGY STAR Certified (41)
- 3D-Ready (1)

### Operating Platform

- Windows (48)

## narrow by:

### category

- Banquet Table (3)
- Bistro Table (9)
- Counter-height Table (7)
- Dinette Table (2)
- Dining Table (66)
- Kitchen Table (4)
- Nook Table (2)
- Pub Table (31)

### shape

- Novelty (1)
- Oval (2)
- Rectangle (47)
- Round (53)
- Square (21)

### finish

- Chrome (10)
- Distressed (7)
- Ebony (6)
- Espresso (20)
- Lacquered (9)
- Natural (7)
- Oak (9)

# Facets

[Homepage](#) > [Women](#) > [Sweaters](#)

## SWEATERS »

[Cardigan](#) »

### NARROW SELECTION BY:

#### Size Range

Show All

(Reg, Plus, Slim, Big & Tall, etc.)

#### Specific Size

Show All

#### Color

Show All

#### Sleeve Length

Show All

#### Fabric

Show All

#### Style

Show All

#### Featured Collection

Show All

## Sleepwear for G

- PJ Pals
- Nightgowns
- Nightshirts
- Slippers
- Sleep Sets

### Refine By

[Clear All](#)

#### Price Range

[Clear](#)

\$9

\$20

#### Characters

[Clear](#)

All Characters

#### Clothing Sizes

[Clear](#)

All Clothing Sizes

#### Sleep Body Style

[Clear](#)

All Sleep Body Style

#### Colors

[Clear](#)



# E-Commerce Taxonomy Design Challenges

1. Distinguishing a subcategory from a facet value
2. Different categorization methods and category cross-overs
3. Related items and accessories
4. Sort order options: alphabetically or not
5. Competitor website comparisons
6. Web site vs. physical store organization
7. Business needs vs. taxonomy standards/best practices

## Challenge 1. Subcategory vs. Facet Value

Categories and subcategories are:

- Things, products, nouns, items that can stand by themselves
- e.g. *Sweater*

Facets and their values are:

- Characteristics, descriptions, adjectives, dimensions of things, which do not stand by themselves
- e.g. *Blue*

## Challenge 1. Subcategory vs. Facet Value

Problem: Modifier + Noun

*Should it be:*

Category: Noun

Subcategory: Modifier + Noun

*OR should it be:*

Category: Noun

Facet value: Modifier

Example:

Flannel Shirts

Shirts

> Flannel Shirts

Category: Shirts

Fabric (facet): Flannel

## Challenge 1. Subcategory vs. Facet Value

### *Considerations:*

- Is the modifier an obvious value of an facet?  
Do customers consider Flannel a kind of fabric or a subtype of shirt?
- Are there other products (other than shirts) in the same website that also have this modifier (such as flannel sleepwear)?
- Is the list of facets already quite long?
- Are the levels of subcategories already deep enough?

## Challenge 2. Categorization and Cross-Overs

Multiple categorization examples:

- Women's Shoes – in Women's Clothing; in Shoes
- Office Furniture – in Office Products; in Furniture

Cross-over product examples:

- Home Theater – in TV/Video; in Audio/Stereo
- Printer-Scanner-Faxes – in Printers; in Scanners; in Fax Machines

## Challenge 2. Categorization and Cross-Overs

Put in both locations – *Polyhierarchy*

OK, but...

- Too much polyhierarchy confuses the tree structure.

Polyhierarchies work better for specific terms/categories at the lowest level or second-lowest with small sub-hierarchies, (e.g. **Fitness GPS Watches** in **GPS Systems**, in **Portable Fitness Electronics**, and in **Watches**), not large hierarchy branches.

- Systems may not fully support polyhierarchy
- Breadcrumb trail may be only a fixed path, not dynamic/not user's path.

## Challenge 2. Categorization and Cross-Overs

The image shows a screenshot of an e-commerce website's navigation and product display. On the left is a vertical navigation menu with categories like 'Electronics & Office', 'Movies, Music & Books', 'Home, Furniture & Patio', 'Apparel, Shoes & Jewelry', 'Baby & Kids', 'Toys & Video Games', 'Sports, Fitness & Outdoors', 'Auto & Home Improvement', 'Photo', 'Gifts, Craft & Party Supplies', 'Pharmacy, Health & Beauty', 'Grocery & Pets', and 'Cyber Week Specials'. The 'Apparel, Shoes & Jewelry' category is circled in red. To the right of this menu is a sub-menu for 'Baby Registry' with various sub-categories like 'Baby', 'Activities & Toys', 'Bath & Skin Care', etc. The 'Baby & Toddler Clothing' sub-category is circled in red. A blue arrow points from this circled sub-category to a breadcrumb trail on the right side of the page. The breadcrumb trail shows 'Apparel : Baby Clothing', with 'Apparel' circled in red. Below the breadcrumb trail are sections for 'Browse In:' (listing 'All Departments', 'Apparel', and 'Baby Clothing'), 'Featured Shops' (listing 'Cold Weather Shop', 'Gift Guide from \$8', 'Newborn Basics', 'School Uniform Shop'), and 'Shop by Age' (listing 'Newborn Boys (0-12 Months)', 'Newborn Girls (0-12 Months)', 'Baby Boys').

Breadcrumb trail may not reflect the user's navigation path, but rather only the other, one fixed hierarchy, path of the polyhierarchy.



## Challenge 3. Related Items

- E-Commerce Taxonomies tend to be simple hierarchical. They usually don't have "related terms" relationships.
- *Individual* products (SKUs) can be manually related.
- Product *categories* (taxonomy terms) are usually not related.

### Special cases:

- Accessories to products
- Related services

### Examples:

- Accessories to Products: **Camera Accessories**
- Related Services: **Delivery and Setup/Installation Services**

## Challenge 3. Related Items

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Issue:

Where to put related items in an hierarchical-only taxonomy

- As narrower terms
- In a separate hierarchy
- Both

## Challenge 3. Related Items

Related accessories narrower terms:

Whether to rename the parent category to include related accessories

### **Computers**

- . Laptop Computers
- . Desktop Computers
- . iPad, Tablet & eReaders
- . Monitors
- . Mice & Keyboards
- . Printers & Scanners
- . Computer Memory
- . Computer Components
- . Computer Accessories

*or*

### **Computers & Accessories**

- . Laptop Computers
- . Desktop Computers
- . iPad, Tablet & eReaders
- . Monitors
- . Mice & Keyboards
- . Printers & Scanners
- . Computer Memory
- . Computer Components
- . Computer Accessories

# Challenge 3. Related Items

Related services listed as a narrower term under products

Cameras + Camcorders	Cell Phones + Phones	Computers	GPS	iPod + Audio	Movies
Bestsellers	Camcorders			Digital Cameras	
Brands	Compact			9 Megapixels + Under	
Canon	DVD			10–12 Megapixels	
Flip Video	Flash Memory			14+ Megapixels	
Fujifilm	Hard Drive			Compact	
Kodak	High Definition			Digital SLRs	
Nikon	MiniDV			Digital Memory	
Olympus	Camera Accessories			Secure Digital (SD)	
Polaroid	Bags + Cases			Memory Stick	
Sony	Lenses			Portable USB Drives	
	Photo Printers			Card Readers	
	Tripods			Digital Photo Frames	
				<b>Services</b>	
				Electronics Trade-In Program	
				Photo Processing	
				Service + Replacement Plans	

# Challenge 3. Related Items

Related items and services listed in a separate hierarchy

The image shows a screenshot of the Sears website's navigation and sidebar. The top navigation bar includes 'DEPARTMENTS', 'WEEKLY AD & DEALS', 'GIFTS', 'SERVICES', and 'SHOP'. The 'SERVICES' menu is expanded, showing 'IN-STORE SERVICES' (Automotive, Layaway, Optical, Portrait Studio), 'HOME SERVICES' (Cleaning, Home Improvement, Installation, Repair), and 'PARTS' (Parts Direct). A 'My scheduled services' link is also visible. The left sidebar features 'Shop By Category' with items like 'Accessories', 'Camcorders', 'Digital Picture Frames', 'Digital Point & Shoot Cameras', 'Digital SLR Cameras', 'Memory & Media', 'Photo Printers', 'Security Cameras', and 'Web Cams'. Below this is 'Other Cool Links' with items like 'Learn about Internet Connectable Devices', 'TV Matchmaker', 'Camera Matchmaker', 'GPS Matchmaker', 'Electronics Trade In Program', 'Battery Finder', and 'Clearance Electronics'. The main content area shows 'HOME SERVICES' and 'BY PRODUCT' sections, with a 'Sears BLUE SERVICE CREW' logo and a banner for 'Services for Home electronics'.

# Challenge 4. Display Sort Order Choice

Could be alphabetical

## Shop By Category

- Accessories
- Camcorders
- Digital Picture Frames
- Digital Point & Shoot Cameras
- Digital SLR Cameras
- Memory & Media
- Photo Printers
- Security Cameras
- Web Cams

## Cameras & Camcorders

- Accessories
- Camcorders
- Digital Cameras
- DSLR Cameras
- Film Cameras
- Web Cameras

or could be “logical”

- Digital Cameras
- Compact System Cameras
- Digital SLR Cameras
- Camera Lenses
- Camcorders
- Memory Cards
- Photo Printers
- Digital Photo Frames
- Webcams
- Binoculars & Optics
- Accessories

## Digital Cameras

- [Camera Bundles](#)
- [Digital SLR](#)
- [14+ Megapixels](#)
- [10-12 Megapixels](#)
- [9 Megapixels + Under](#)
- [Long Zoom](#)
- [Film Cameras](#)
- [Waterproof](#)

## Camcorders

- [Compact Digital](#)
- [DVD](#)
- [Flash Memory Digital](#)
- [Hard Drive +](#)
- [Memory Card](#)
- [High Definition](#)
- [MiniDV](#)

## Shop by Brand

- [Canon](#)
- [FUJIFILM](#)
- [Flip Video](#)
- [JVC](#)
- [Kodak](#)
- [Nikon](#)
- [Olympus](#)
- [Polaroid](#)
- [Samsung](#)
- [Sony](#)

## Camera Accessories

- [Bags + Cases](#)
- [Flashes + Lights](#)
- [Lenses](#)

## Challenge 5. Comparing with Competitors

1. Need to distinguish comparing design with comparing content organization.
2. There may not be a 100% identical competitor.  
Each retailer has a slightly different focus.
  - Target – general, but no major appliances
  - Sears – general, plus automotive parts
  - Walmart – general, plus pharmacy
  - Best Buy – electronics focus, plus appliances, furniture, etc.
  - Sam's Club – general, no clothing; plus pharmacy & grocery
  - Amazon – book and media focus; plus everything else
3. Brand retailers (e.g. clothing) *try* to differentiate themselves.

## Challenge 6. Comparing with Physical Stores

There may be a push to organize the product taxonomy in conformity with store layout and organization.

- Loyal customers might understand it.
- But are customers divided by store loyalty or by physical store vs. online shoppers?

Factors may be unique to physical stores:

- Newest/hottest products at the entrance
- Small accessories in the checkout lines
- Larger items in the back
- Use of aisle end-caps for featured items
- Creative use of physical space



## Challenge 7. Business Needs vs. Best Practices

Possible taxonomy requests for “business needs” that challenge taxonomy standards or best practices:

- Creating new top level categories for relatively small, hot categories, that belong under existing top categories
- Creating multiple polyhierarchies for a product category to help promote it
- Creating intermediate level categories to group and promote related subcategories, not to serve navigation

## Challenge 7. Business Needs vs. Best Practices

Solution to taxonomy requests for “business needs” that challenge taxonomy standards or best practices:

- Create more than one navigation path
  1. Accurate hierarchies (such as in left-hand margin)
  2. Promotional categories (in central space)
  
- Create a “featured” category that is manually maintained

# Challenge 7. Business Needs vs. Best Practices

- List of next level categories may differ in the true taxonomy of the left hand navigation, compared with the central area.

## Laptop & Netbook Computers

### Shop Laptop & Netbook Computers

All Laptops  
PC Laptops  
MacBooks  
Chromebooks  
Ultrabooks  
Netbooks  
Refurbished Laptops

Laptop Accessories

Laptop Bags & Cases

Mobile Broadband

### Shop Laptops



PC Laptops



MacBook



Premium  
Collection



Ultrabook™  
Laptops



Refurbished  
Laptops



Netbooks

## Electronics

- Auto Electronics
- Cameras & Camcorders
- Cell Phones
- Computers
- GPS & Navigation
- Home Audio & Theater
- iPad & eReaders
- iPods & MP3 Players
- Office
- TV & Video

## Related Categories

- Home Appliances
- Kids' Electronics
- Movies & TV
- Musical Instruments
- Video Games

## Special Offers

- Clearance
- Rollbacks
- Special Buys
- Value Bundles

## Shopping Tools

- Battery Finder
- Buyback Plan
- Electronic Trade-In
- Explore VUDU-enabled TVs
- Show & Explore New

**New Technology**

**3D TVs** from **\$888.00**

**3D DVD Players**

**3D TV Accessories**

**See the Difference and Save**  
Look for The Green Hornet™ on Blu-ray 3D™

**3D TVs**      **3D TV Accessories**

PAUSE 1 2 | See the Difference and Save

## Free Shipping With Site to Store on Eligible Items



## Featured Categories



### Save on TV and Video Solutions

- TVs
- Home Theater Systems

### Everything for Your Laptop - for Less

- Laptops
- Cases & Bags
- Mice

### Top Values in Electronics

See all **Top Values in Electronics**

## Conclusions

- Product taxonomies are not as simple to create as expected.
- Taxonomy design may be under constraints.
- Business needs can challenge taxonomy standards.
- Creative solutions may be needed.
- Consider customer perspectives, use cases, and scenarios.

# Questions/Contact

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