



## Taxonomies and Content Models | A Practical Guide

Gilbane Conference, Washington, DC | June, 2007

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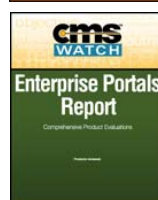
### Independent, buyer-centered evaluations of content technologies & practices



The Web CMS Report evaluates 30 Web CMS packages.



Enterprise Search Report evaluates 28 Search vendors.



Enterprise Portals Report evaluates 15 products of 13 major Enterprise Portals vendors.

#### New:

- The ECM Suites Report
- Web Analytics Report

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## Agenda

- A bit about each of us
- Level-setting of terms and concepts
  - Not just a methodology, a *way of thinking*
  - *Content models, taxonomy, meta data, folksonomies and the current state of their use*
- A few case study examples
- Creating a taxonomy and content model: step-by-step approach
- Interactive exercise
- Maintenance and governance

## A bit about me

- Principal at CMS Watch since May 2006
- Prior, taxonomy designer and implementer of many a CMS for over a decade
- “Back-end Information Architect”
- Focus on how content technologies can (or can't) use content structures
- Educational background in languages and linguistics
- Currently developing a training and certification program for AIIM around Information Organization and Access (IOA)

## A bit about YOU

- Why are you here?
- What would you like to learn?
- In which areas of CM do you work (DM, RM, WCM other)?
- Would you consider yourself beginner, intermediate or advanced in terms of taxonomy knowledge?
- What are your current challenges with regards to taxonomy?
- Do you use a CMS?
- Do you own an iPod?
- Do you play golf?

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The best taxonomists....

....see the world differently

So do the best golfers.

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How should Tiger approach his next shot?



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### Important “content” for Tiger and Steve to consider

- Distance to target
- Weather conditions
  - Wind
  - Rain
- Dampness of course
- Hazards
  - Bunkers / Sand Traps
  - Water
- Hole layout
  - Dogleg?
  - Elevated green?



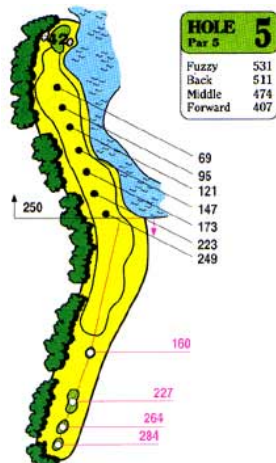
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### Tiger and Steve’s content model



- Pictorial
  - Illustration of hazards
  - Layout of hole
- Textual
  - Distances (yards) from tees to green
  - Distance from each tee to water hazard
  - Distance from hazard to green

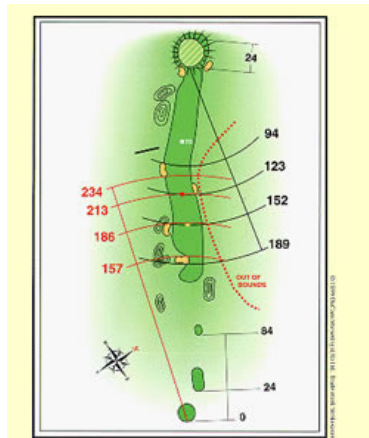
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## Same content, different content model



All measures in metres	349	323	305	305
	4	4	4	4

- Pictorial
  - Illustration of hazards
  - Layout of hole
  - Red indicates “out of bounds”
- Textual
  - Distances (meters) from tee to various spots on the hole (markers, hazards)
  - Distances from various hazards to the green
  - Distances between the tees
  - Distances from tee to green

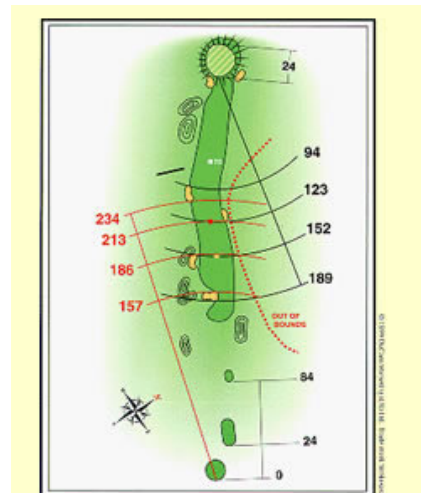
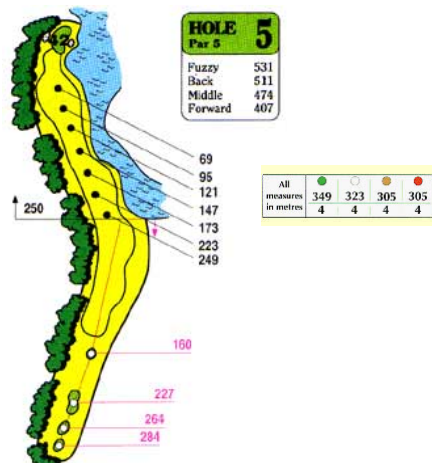
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## Two ways of conveying the same data



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## Users take action based on the information at hand



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## Some results are positive...



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### ...and some aren't so positive



- Effective content models enable business users and end customers to find and act on the information they need to make them successful
- Where would Tiger be without his well-stocked, granular and detailed data source (his caddy?)
  - Shooting blind...
- How do the elements of a golfer's content model help Tiger make smart decisions?

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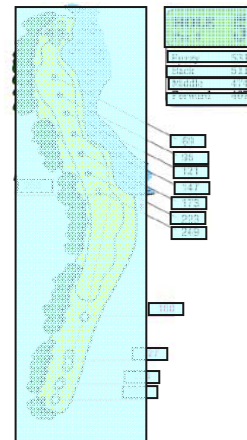


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### Definitions of Content Model

- The components that comprise a body of content
  - (a.k.a., all the content pieces)
- The semantic structure of a body of content
  - (a.k.a., how those pieces relate to each other)
- A framework applied to data to create information
  - (a.k.a., making those related pieces useful to the people who need it)



*This is how you need to see and think about information.*

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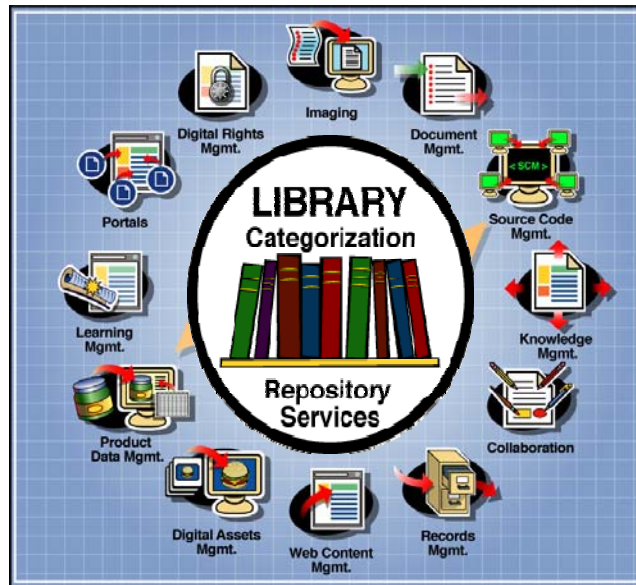


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## Content Models Enable ECM



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## Setting the stage | Some definitions

***Content Models are just as important as (if not more important than) the technology you use***

*What comprises a content model?*

### Taxonomy

- **Law** for **categorizing** information

### Meta Data and/or Content Attributes

- Information **about** content: "data about the data"

### Vocabularies

- A sum or stock of words employed in a field of knowledge

### Content Components

- How your content "breaks down" into discreet "chunks"

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## And in case you're not a golfer...



Is this really better than The Shuffle, which doesn't rely on meta data?

- *Taxonomies and content models are part of our everyday lives.*
- They're also usually INCONSISTENT.
- Have you ever ripped CDs to an iPod?
- Meta data = Artist, album, song title, genre, composer, playlist
- Awful for classical music – composer vs. artist, misspellings, variants
  - Beethoven
  - Ludwig van Beethoven
  - Beethoven, Ludwig van
  - van Beethoven, Ludwig
- Inconsistency muddles user experience

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## A few more definitions

- Facets: Allow for a more complex classification structure, where the categories are applied to the information like keywords. Thus, information about a subject can be “approached” and found in different ways.
  - **Hypertension**
    - *Publications / Medical / Journal of Hypertension*
    - *Diseases / Cardiovascular / Hypertension*
    - *Associations / Medical / American Society of Hypertension*
  - **Red Rock Crab**
    - *Animals / Invertebrates / Crustaceans*
    - *World / Seas / Pacific*
    - *World / Land / Australasia*
  - **Beethoven Violin Concerto**
    - *Genres / Classical / Artists / Heifetz*
    - *Albums / Beethoven Violin Concerto*
    - *Composers / Beethoven, Ludwig van / Beethoven Violin Concerto*

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### A few more definitions

- Synonym Ring: A set of words/phrases that can be used interchangeably for searching. (Hypertension, high blood pressure)
- Thesaurus: A tool that controls synonyms and identifies the relationships among terms
- Controlled Vocabulary: A list of preferred and variant terms, with relationships (hierarchical and associative) defined. **A taxonomy is a type of controlled vocabulary.**

### Dewey vs. Uncle Sam



VS.



#### Dewey Decimal

000	General & Bibliography .....
100	Philosophy & Psychology ..
200	Religion .....
300	Social Science .....
400	Languages & Linguistics .....
500	Sciences .....
600	Technology .....
800	Literature .....
900	Geography & History .....

1. General Works
2. Philosophy, Psychology, Religion
3. History: Auxiliary Sciences
4. History: General and Old World
5. History: United States
6. History: Western Hemisphere
7. Geography, Anthropology, Recreation
8. Social Science
9. Political Science
10. Law
11. Education
12. Music
13. Fine Arts
14. Literature & Languages
15. Science
16. Medicine
17. Agriculture
18. Technology
19. Military Science
20. Naval Science
21. Bibliography & Library Science



And finally, what about....

# “Folksonomies”?

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Simple Truth | People see the world differently



**BREAKFAST**



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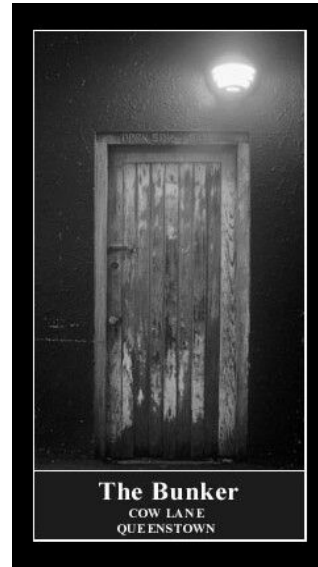
## Simple Truth | Words evoke multiple meanings



**SAND TRAP**



**BUNKER**



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## Taxonomy Backlash

- Taxonomies are top-down, dictatorial, “expertly”-determined classification schemes with variable flexibility
- Though invaluable in the CMS realm, taxonomies are rarely exhaustive or encompassing of many individuals’ perspectives on content
- Folksonomies give “Power to the People” to tag and retrieve content to their liking, and share that approach/perspective with others



- But with such freedom come many drawbacks
- Folksonomies are more anarchistic than democratic

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## Folksonomy Basics

- *Folksonomy*: the anti-controlled vocabulary.  
Collaborative, user-driven vocabularies for tagging content, rarely with any sort of control
- Portmanteau of the words "folks" and "taxonomy"
- Method of labeling and organizing data by collaborative tagging
- Generally arise in Web-based communities where technology exists that allow users to self-publish, share content, then create and use tags (e.g., blogs)
- Relevance between meta data and content may be determined by users in a democratic fashion
  - four users define an object as being 'green'
  - one user defines an object as being 'aqua'
  - relevance can be defined as "more green than aqua"
  - derived by the user-defined meta tags



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## Folksonomy Example | Flickr



Already a member? [Sign in.](#)

**flickr** BETA

The best way to **store, search, sort** and **share** your photos.

[Sign up!](#)

Or, [learn more.](#)

I hate [flowers](#). I [paint](#) them because they're [cheaper](#) than [models](#) and they don't [move](#). - Georgia O'Keeffe

Find a photo of...

 [GO](#)


Or, browse [popular tags?](#)

[Explore Flickr](#)

Browse interesting photos shared over [the last 7 days](#).



**Forbes** "Amazingly easy"

 "Visual playground"

**TIME** "Completely addictive"

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## Folksonomy Example | Flickr

Photos: [Explore Flickr](#) · [Learn More](#)

flickr BETA

Tags / flowers

[View as slideshow](#)  
(New window <sup>⌘</sup>)

Sort by:  
Most recent · [Most interesting](#)

[flowers clusters](#)

Explore and refine flowers photos with our clusterly goodness!

 Find similar images on  
[Yahoo! image search](#)

Ads from Yahoo!

Bach Flower for Less  
All Bach Flower Remedies, Rescue Remedy, Rescue at low prices. Also full...

[www.webvitamins.com](#)

Bach Flower Remedy  
Get your individual Bach remedy for only \$14.95 balance your mind, heart...

[feelbach.com](#)



From [annieta](#)



From [annieta](#)



From [annieta](#)



From [Rainier Fritz](#)



From [Boloh the robot](#)



From [mathowie](#)



From [KOZ](#)



From [seana](#)



From [cienned5](#)



From [cienned5](#)



From [cienned5](#)



From [Pamela](#)



From [Pamela](#)



From [Pamela](#)



From [Pamela](#)



From [Pamela](#)

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## Folksonomy roots and related trends

- **Social networking software**: applications that connect friends, business partners, or other individuals together using a variety of tools
  - MySpace, LinkedIn
  - Folksonomies facilitate social networking
- One of many technologies that allow users to “take over” and be the master of their domains
  - Wikis, RSS, blogs, faceted browsing

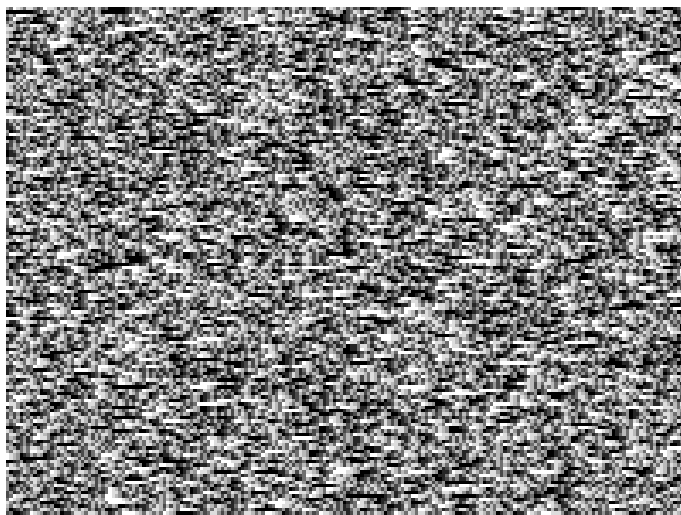
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## Folksonomy Disadvantages



*Meta noise:*  
inaccurate  
or  
irrelevant  
meta data

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## Making order of chaos

Photos: [Explore Flickr](#) - [Learn More](#)

flickr BETA

Tags / [sanfrancisco](#) / [clusters](#)

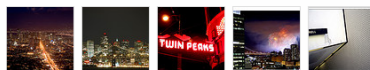
SEARCH

(Or, try an [advanced search](#).)



[california](#), [bridge](#), [goldengate](#),  
[goldengatebridge](#), [bay](#), [sf](#), [water](#), [alcatraz](#), [usa](#),  
[ocean](#)

→ [See more in this cluster...](#)



[city](#), [street](#), [night](#), [urban](#), [skyscraper](#)

→ [See more in this cluster...](#)



[baseball](#), [giants](#), [sfbcpark](#)

→ [See more in this cluster...](#)



[coit](#), [tower](#)

→ [See more in this cluster...](#)



[deyoung](#), [museum](#)

→ [See more in this cluster...](#)

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## Making order of chaos

Photos: [Explore Flickr](#) · [Learn More](#)

**flickr**

Tags / [goldengatebridge](#) / clusters

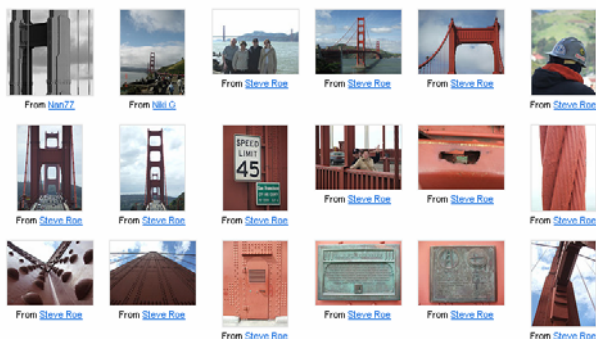
goldengatebridge

(Or, try an [advanced search](#).)

[sanfrancisco, california, bridge, goldengate, bay, of, fun, water, sunset, view](#)

→ [See more in this cluster...](#)

These are the most recent photos tagged with [goldengatebridge](#). [See more...](#)



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**cms WATCH**  
GET THE REAL STORY

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## Best of both worlds

- Modern practice is usually a moderated / edited folksonomy, supported by a taxonomy framework
  - Create clusters and hierarchies based on user tags, like flickr
  - Eliminate / merge redundant tags
  - Flickr is a great example
- Give users tagging guidelines
- User research and analysis should be the foundation of any taxonomy design process
  - This will minimize the need for folksonomy

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## Example | Analog Devices

The screenshot shows the Analog Devices website with a navigation menu and a grid of product categories. The categories include:

- Amplifiers and Comparators**: Buffer Amplifiers, Comparators, Current Sense Amplifiers, Differential Amplifiers, Fiber Optic Log/Limiting Amps, Fiber Optic Transimpedance Amplifiers, Gain Control Amplifiers, Instrumentation Amplifiers, Isolation Amplifiers, LCD Drivers, Line Drivers, Operational Amplifiers (Op Amps), Variable Gain Amplifiers.
- Analog to Digital Converters**: ADC Converters, Audio ADC Converters, Energy Measurement, Synchro/Resolver to Digital Converters, Temperature to Digital Converters, Video Decoders, Voltage to Frequency Converters.
- Digital to Analog Converters**: DAC Converters, Audio DAC Converters, Digital Potentiometers, Video Encoders.
- Embedded Processing & DSP**: Blackfin Processor, TigerSHARC Processor, SHARC Processor, ADSP-21xx Processor, Development Tools.
- Analog Microcontrollers**
- MEMS and Sensors**: iMEMS® Accelerometers, iMEMS® Gyroscopes, Analog Temperature Sensors, Digital Temperature Sensors.
- RF/IF Components**: Baseband Processing, CATV Amps/Splitters, Clock and Data Recovery/Retiming, Clock Distribution, Differential Amplifiers, Digital Crosspoint Switches, Direct Digital Synthesis (DDS), Fiber Optic EA Modulator Drivers.
- Power and Thermal Management**: Analog Temperature Sensors, Battery Chargers, Charge Pumps, Digital Temperature Sensors, GSM Power Controllers, Hot Swap Controllers, LED Drivers, i-Linear® Power Solutions.
- Audio/Video Products**: Audio ADC Converters, Audio CODECs, Audio DAC Converters, Audio Signal Processors, Camera/Camcorder Analog Front Ends, Display Interfaces, Sample Rate Converters, Video CODECs.

On the right side of the website, there are links for Corporate Information, Investor Relations, Press Releases, Job Opportunities, Sales & Distributors, and Quality & Reliability. A section titled 'Working with ADI' highlights Vana's Anywave Base Station featuring ADI's data converters awarded 'Best Network Infrastructure' and ADI's Mixes It Up SHARC Drives Metric Halo's Portable Pro Audio Hub. A 'Future Directions' section mentions ADI's Four-Way Signal Splitting Devices, enabling STB Manufacturers to Take a Giant Step in Home Entertainment, and ADI Simplifies Wireless Infrastructure Design With.

Consists of categories and sub-categories to classify complex semi-conductor products

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## Example | Analog Devices

ANALOG DEVICES

Search:  Parametric Search | Replacement Parts Search | View Cart | My Account | Log In

Home | Contact Us | Post this Page | Email this Page

### Amplifiers and Comparators

Amplifiers and Comparators

Check out the [Amplifier Selection Guide](#)

Web Seminar: [New Tools That Make Op Amp Selection Easier](#)

**Amplifiers and Comparators**

Amplifiers and Comparators are the building blocks of many analog systems. They are used in a wide variety of applications, from audio and video to industrial and medical. They are also used in many consumer products, such as cell phones and digital cameras. Amplifiers and comparators are available in a wide range of packages, from surface-mount to through-hole. They are also available in a wide range of performance levels, from low-cost to high-performance. Amplifiers and comparators are a key part of many analog systems, and they are a key part of many consumer products. They are also a key part of many industrial and medical systems. Amplifiers and comparators are a key part of many analog systems, and they are a key part of many consumer products. They are also a key part of many industrial and medical systems.

**Buffer Amplifiers**

If your design requires an amplifier that is simply used as a buffer, the AD822 is the right solution for you. These easy-to-use amplifiers are specifically optimized for buffer applications, and they are available in a wide variety of packages.

[Product Selection Table](#)

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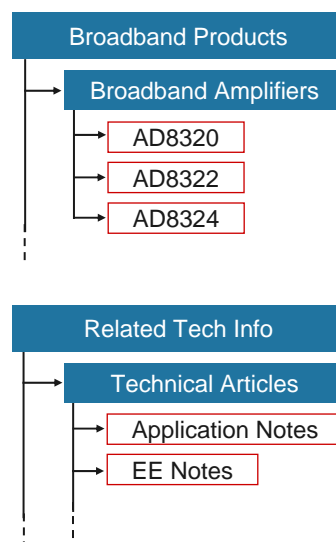
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## Two Taxonomies

- Product Taxonomy
  - Hierarchy of products
  - Leaf elements are products
  - Require at least one product
- Content Taxonomy
  - Hierarchy of content types
  - Leaf elements are content types
  - Require at least one sub-type

These are managed in separate repositories!





## “Placeless” vs. “Placeful” content | Applying business logic

**2005 Press Releases:**

March

14 Mar 2005 Analog Devices Debuts Integrated Lens Driver Solution For Cell Phone Cameras - ADI's lens driver chip provides industry's smallest, lowest cost solution for address applications.

09 Mar 2005 Analog Devices Reveals New Strategic Business For Channel

09 Mar 2005 Analog Devices Expands Analog-to-Digital Converter Line With AD7768 - The Blackfin Processor combined with AD7768 provides a complete signal chain.

08 Mar 2005 Leaders In The Embedded Systems Development Community At The Embedded Systems Conference, Agilent Technology of ADI's Blackfin Processor Family

08 Mar 2005 Analog Devices, Blackfin Processor Powers Power Supply Conversion, and Fully-Integrated Solutions of the Blackfin Processor family in consumer electronics products.

07 Mar 2005 Analog Devices Unveils Industry's First Single-Chip Solution - ADI's new family of capacitors-to-digital converters (C2D) instrumentation and sensor design in industrial, automotive.

04 Mar 2005 High Efficiency Secondary Side Converter Dramatically Reduces Power Losses - ADI's new family of capacitors-to-digital converters (C2D) instrumentation and sensor design in industrial, automotive.

01 Mar 2005 Analog Devices To Showcase Advanced Signal Processing at Embedded Systems Conference, Analog Devices Shows

**Standard DACs - Press Releases**

To view Adobe Acrobat PDF format files you must install Adobe Acrobat Reader. We recommend Adobe Acrobat 6.0

29 Jun 2002 [Octal Voltage Output DACs For Space-Constrained Communication And Instrumentation Equipment Designs](#)

30 May 2002 [Industry's First 16-Channel, 12-Bit DAC Provides Bipolar Outputs And A 14-Bit Input Mode](#)

09 May 2002 [Industry's First 14-Bit, ±10 V, Bipolar Output DAC With Serial Interface Ideal For Industrial Control And Instrumentation Applications](#)

02 Oct 2002 [48-Channel, 14-Bit Bipolar DAC Addresses AT&T, Optical Networking And Data Acquisition Requirements](#)

25 Mar 2003 [Optical Networking Applications Benefit From Analog Devices' New 40-Channel And 22-Channel Digital-To-Analog Converters](#)

**Press Releases - ADSP-BF531**

24 Mar 2003 [Analog Devices' New Blackfin Family Offers The Fastest And Most Power-Efficient Processors For Their Class](#)

31 Mar 2003 [Analog Devices Showcases Innovative Technology at the First Annual GSP&I International Signal Processing Conference](#)

21 Apr 2003 [Analog Devices Demonstrates Next-Generation Media Processing At The 15th Annual Embedded Systems Conference](#)

23 Apr 2003 [Analog Devices And Green Hills Software Collaborate On Embedded Development Tools For Blackfin Processor](#)

26 Apr 2003 [Analog Devices' New Blackfin eMedia Platform Enables Lowest Cost Implementation of Windows Media Video 9 Series In Consumer Electronics](#)

07 Jul 2003 [New Analog Devices' Blackfin Car Telematics Platform Brings Low-Cost Telematics To The Automotive Mainstream](#)

08 Jan 2004 [Analog Devices' Blackfin Processor Powers New Roku Soundtunes Network Music Players](#)

08 Jan 2004 [Analog Devices' Blackfin Processor Chosen By Authentec For Fingerprint Sensor Subsystem's Embedded Developer's Kit](#)

**Press Release**

**Category-specific press release**

**Product-specific press release**

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## Content model enabling personalization

**myAnalog**

Welcome Jarrod Gingras!

This is your myAnalog home page. Customize this page by selecting your choices on the left, including:

- Select specific products you wish to keep track of, including product status changes.
- Select which types of information you want, such as data sheets and application notes.
- Select product categories that are relevant to your work.
- Receive a weekly email customized based on your selections.

[Expand All](#) | [Collapse All](#)

**My Products**

Product	Product Status	What's New!
<b>AD9051</b>	Production	<a href="#">Data Sheets</a> (1) <a href="#">Seminars/Workshops/Tutorials</a> (10) <a href="#">Design Tools</a> (1) <a href="#">Application Notes</a> (3)
<b>AD820</b>	Production	<a href="#">Technical Documentation</a> (0) <a href="#">Selection Tables</a> (2) <a href="#">Evaluation Boards/Tools</a> (2)
<b>ADSP-2186</b>	Production	<a href="#">Manuals</a> (4) <a href="#">Software Tools Upgrades</a> (2) <a href="#">Evaluation Boards/Tools</a> (0) <a href="#">Press Releases</a> (2)
<b>ADSP-2185</b>	Production	<a href="#">Data Sheets</a> (1) <a href="#">Selection Tables</a> (1) <a href="#">Application Notes</a> (0)
<b>ADSP-2181</b>	Production	<a href="#">Data Sheets</a> (1) <a href="#">Selection Tables</a> (1)

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## EPA > Topics

The screenshot shows the EPA Pesticides website. The main content area features a 'Highlights' section with several news items, including information on avian flu disinfectant products, the EPA's Pesticide Program moving to a new location, and updates on pesticide registration. A 'Quick Finder' section is also present, providing links to various resources. The sidebar on the left contains a '35th Anniversary' banner and a 'Quick Finder' section with links to EPA Newsroom, Laws, Regulations & Dockets, and other topics. The bottom of the page includes a copyright notice for CMS Watch and the AIIM Expo, Boston, 2007.

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## Hierarchical taxonomic searching in DAM systems

The screenshot shows the MediaBin DAM system interface. The left sidebar displays a hierarchical search tree with categories like 'Sector', 'Sector Category', 'Brand Category', and 'Brand'. The main area shows a grid of assets, including images, videos, and documents, each with a thumbnail and a title. The bottom of the page includes a copyright notice for CMS Watch and the AIIM Expo, Boston, 2007.

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## Example | Epicurious

### main ingredient

Beans, Beef, Berries, Cheese, Chicken, Chocolate, Citrus, Dairy, Duck, Eggs, Fish, Fruits, Game, Garlic, Ginger, Grains, Greens, Herbs, Lamb, Mushrooms, Mustard, Nuts, Olives, Onions, Pasta, Peppers, Pork, Potatoes, Poultry, Rice, Shellfish, Soy, Tomatoes, Turkey, Vegetables, Yogurt

### cuisine

African, American, Asian, Cajun/Creole, Caribbean, Central/South American, Chinese, Eastern European, English/Scottish, French, German, Greek, Indian, Irish, Italian, Japanese, Jewish, Mediterranean, Mexican, Middle Eastern, Moroccan, Scandinavian, Southern/Soul Food, Southwestern, Spanish, Thai, Vietnamese

### special considerations

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

### preparation method

Advance, Bake, Barbecue, Braise, Broil, Freeze/Chill, Fry, Grill, Marinade, Microwave, No Cook, Poach, Quick, Roast, Sauté, Slow Cook, Steam, Stew, Stir Fry

### season / occasion

Christmas, Cocktail Party, Easter, Fall, Fourth of July, Hanukkah, New Year's, Passover, Picnics, Spring, Summer, Super Bowl, Thanksgiving, Valentine's Day, Winter

### course / meal

Appetizers, Breakfast, Brunch, Desserts, First Course, Hors d'Oeuvres, Main Course, Side, Snacks

### dish

Bread, Cake, Candy, Condiments, Cookies, Marinades, Pie/Tart, Salads, Sandwiches, Sauces, Seasonings/Spices, Soup, Vegetables

- Allows users to narrow down and select recipes based on very granular attributes

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## Example | Epicurious

browsing by: Beef

Browse > Main Ingredient > Beef

refine by: Course | Dish | Cuisine | Season/Occasion | Special Considerations | Preparation

Appetizers (50) Brunch (8) First Course (9) Main Course (835) Snacks (4)  
Breakfast (7) Desserts (2) Hors d'Oeuvres (25) Side (9)

964 recipes found for: Beef

rating recipe name at a glance

HUNGARIAN-STYLE BEEF WITH BELL PEPPERS AND CARAWAY  
Bon Appétit, November 2005

FILETS MIGNONS WITH ORANGE FENNEL CRUST  
Gourmet, November 2005

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## Example | Epicurious

browsing by: **Beef** | **Main Course** | **Marinades** | **Asian**

refine by: **Season/Occasion** | **Preparation**

**Spring (1)** **Summer (2)**

3 recipes found for: Beef + Main Course + Marinades + Asian

rating	recipe name	at a glance
	<b>BOK CHOY WITH BEEF</b> Gourmet, September 2000	
	<b>HOISIN-MARINATED FILETS MIGNONS WITH HECTARINE SALSA</b> Gourmet, April 1999	
	<b>GRILLED LEMONGRASS BEEF AND NOODLE SALAD</b> Gourmet, June 1995	

Browse > Main  
Ingredient > Beef >  
Main Course >  
Marinades > Asian

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## Enabling advanced search

keyword  All ▼

special considerations  
(about special considerations)

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

course Main Course ▼
 cuisine Italian ▼
 season / occasion Thanksgiving ▼

type of dish all types ▼
 preparation method all methods ▼
 source all sources ▼

main ingredients

☐ Beans
 ☐ Duck
 ☐ Greens
 ☐ Pasta
 ☐ Tomatoes  
☐ Beef
 ☐ Eggs
 ☐ Herbs
 ☐ Peppers
 ☐ Turkey  
☐ Berries
 ☐ Fish
 ☐ Lamb
 ☐ Pork
 ☐ Vegetables  
☐ Cheese
 ☐ Fruits
 ☐ Mushrooms
 ☐ Potatoes
 ☐ Yogurt  
☐ Chicken
 ☒ Game
 ☐ Mustard
 ☐ Poultry  
☐ Chocolate
 ☒ Garlic
 ☐ Nuts
 ☐ Rice  
☐ Citrus
 ☐ Ginger
 ☐ Olives
 ☐ Shellfish  
☐ Dairy
 ☐ Grains
 ☐ Onions
 ☐ Soy

exclude from search  
(about exclude)

☐ dairy
 ☒ nuts
 ☐ shellfish
 ☐ eggs
 other

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### Case studies | Key takeaways

- Think about what you want the user experience to be
- Design your content model to accommodate that experience
- Don't "over-chunk" – keep management process in mind
- Meta data can be both inherent OR defined, implicit OR explicit
- Categorization can be applied at any level – to an entire document in a DM scenario or a single parameter in a WCM or search scenario

It's time for a.....

BREAK

## Agenda

- A bit about each of us
- Level-setting of terms and concepts
  - Not just a methodology, a *way of thinking*
  - *Content models, taxonomy, meta data, folksonomies and the current state of their use*
- A few case study examples
- Creating a taxonomy and content model: step-by-step approach
- Interactive exercise
- Maintenance and governance

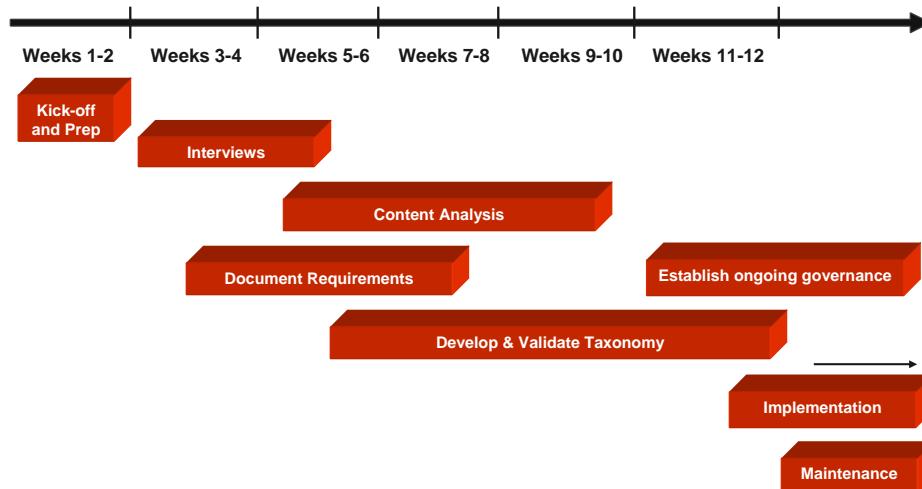
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## Typical Project Timeline\*



**Caveat: this will vary greatly based on the complexity of the content and the organization**

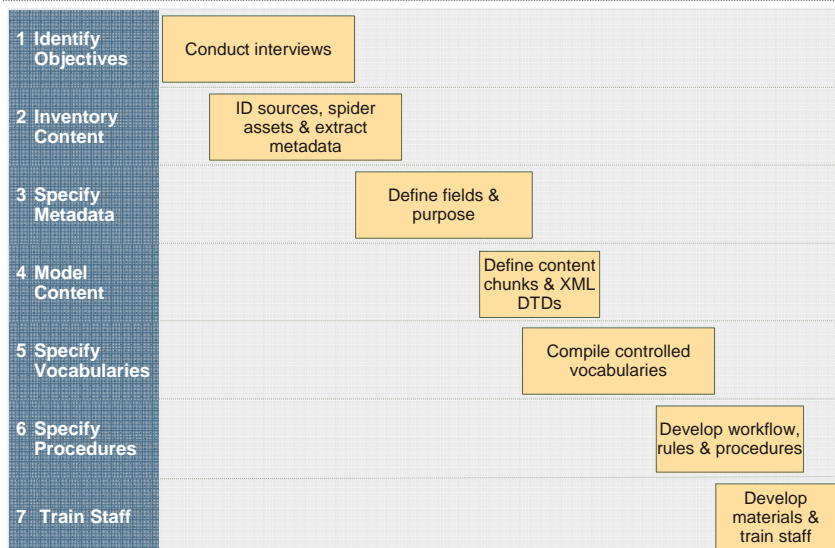
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## Seven phases of taxonomy and metadata design



Source: Taxonomy Strategies, LLC

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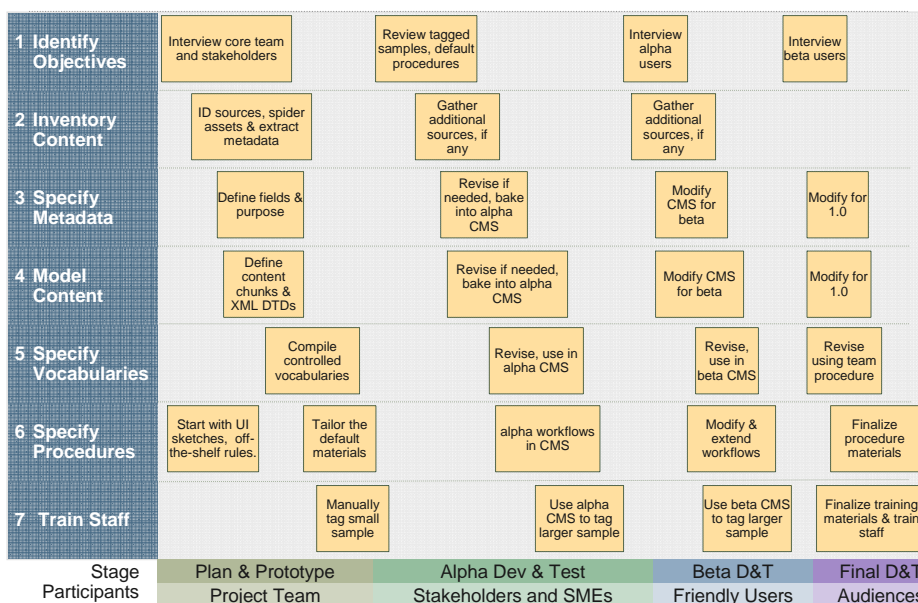


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## Taxonomy and metadata design

Source: Taxonomy Strategies, LLC



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## Project Prep | Key Considerations

- What is the level of knowledge about taxonomy in the company as a whole?
- What are the most important priorities for the taxonomy?
- How much do I know about the subject matter? How much ramp up do I need?
- How many types of content will I need to consider?
- How much content is there (quantity-wise)?
- How many stakeholders and subject matter experts (SMEs) are there? How are they organized? (e.g. one "owner/SME" per product line?)
- What types of politics or challenges exist today between groups of owners/subject matter experts? Will they debate and/or argue over terminology or what should be classified where?

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## Project Prep | Key Considerations

- Does any of the terminology need to be created from scratch or re-written?
- What kind of data store will the taxonomy be used in? (Database? XML repository?)
- Has any user feedback been received so far (internal or external, formal or informal), as to what they like and don't like about finding the company's information?
- Is there a product database of any sort in existence today? What product characteristics are accounted for? (name, description, number, etc.)
- If there is a web site, how is it organized today? (e.g. products, solutions, roles, etc.)
- How will users tag content using this taxonomy? Do they have that software/interface in place today?
- Will we need to train users to tag content?

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## Project Prep | Integration | Key Considerations

- What kind of data store will the content model be used in? (Database? XML repository?)
- What is the appropriate level of granularity?
  - Break down of every element?
  - Storing content as “blobs”?
- Which systems will need to use the content model, and at which levels of granularity? (this might vary from system to system)
- How might each individual element of the content model *relate to* content that exists elsewhere in the enterprise?

## Step 1 | Identify objectives

I'm sure the users search by the catalog code.

I understand how it's organized – users will too.

People who aren't federal employees think the same way we do.

I know what people want when they come to the site.

We don't have time to involve users.

**...you need to ask your  
USERS**

## Step 1 | Identify objectives | Ask your users!



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## Step 1 | Identify objectives | User-centered content modeling

- Listen to your customers! (both internal and external)
  - Qualitative research: focus groups, card sorting
  - Quantitative research: surveys, search logs
- Think of your content model as part of the customer experience, rather than just a way of organizing data
  - How do your users need to USE the data? (search, display, sorting, etc.)
  - Once applied via CMS, your content model affects how you can display, target and search for content
- Validate content models with **BOTH** internal stakeholders **AND** external customers
  - Usability tests aren't just for user interfaces
- Essentially: apply human factors best practices to your content model design

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## Step 1 | Identify objectives | Stakeholder objectives

- Catalog site - ROI based on increased sales through improved:
  - Product findability
  - Product cross-sells and up-sells
  - Customer loyalty
- Call center - ROI based on cutting costs through:
  - Fewer customer calls due to improved website self-service
  - Faster, more accurate CSR responses through better information access
- Compliance – ROI based on:
  - Avoiding penalties for breaching regulations
  - Following required procedures (e.g. Medical claims)
- Knowledge worker productivity - ROI based on cutting costs through:
  - Less time searching for things
  - Less time recreating existing materials, with knock-on benefits of less confusion and reduced storage and backup costs
- Executive mandate
  - No ROI at the start, just someone with a vision and the budget to make it happen

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## Step 2 | Content inventory and analysis

- Conduct industry competitive analysis if appropriate
- Review content and create a high-level inventory
- Determine the terms the business uses to categorize information (top-down approach)
- Determine the term the employees use when seeking information (bottom-up approach)
- Gather all terms / categories / content types
- Check vis-à-vis original content inventory to ensure everything is accounted for

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### Example | Document inventory with topic breakdown

	A	B	C
1	Document Name	Topic	SubTopic
2	Incentive Compensation Plan	Weight	
3	Incentive Compensation Plan	Objective	Corporate
4	Incentive Compensation Plan	Objective	Division
5	Incentive Compensation Plan	Objective	Individual
6	Incentive Compensation Plan	Focus	
7	Incentive Compensation Plan	Metrics	
8	Incentive Compensation Plan	Measured Expected Results	Threshold
9	Incentive Compensation Plan	Measured Expected Results	Target
10	Incentive Compensation Plan	Measured Expected Results	Exceptional
11	Strategic Presentations	Succession Planning	Objectives
12	Strategic Presentations	Succession Planning	Priorities
13	Strategic Presentations	Succession Planning	Leadership
14	Strategic Presentations	Succession Planning	Job
15	Strategic Presentations	Succession Planning	Candidate
16	Strategic Presentations	Succession Planning	Mission
17	Strategic Presentations	Succession Planning	Nominating
18	Corporate Objectives	Vision	
19	Corporate Objectives	Mission	
20	Corporate Objectives	Marketplace Drivers	
21	Corporate Objectives	Success Factors	
22	Corporate Objectives	Corporate Objectives	Claims Management
23	Corporate Objectives	Corporate Objectives	Underwriting
24	Corporate Objectives	Corporate Objectives	Loss Prevention and Patient Safety
25	Corporate Objectives	Corporate Objectives	Finance

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### Example | Product topic inventory

Cosmetics	Eyes	Eye Lashes Eye Liner & Pencils Eye Shadow Mascara Tools & Accessories
	Face	Blush Concealer Foundation Makeup Remover Powders Tools & Accessories
	Lips	Lip Balm Lip Gloss Lip Liner & Pencils Lipstick Tools & Accessories
	Nails	Nail Polish Nail Polish Remover Nail Tips Nail Treatments Tools & Accessories
Diet & Nutrition	Appetite Suppressants	<i>no subcategories</i>
	Diet & Nutrition Supplements	<i>no subcategories</i>
	Weight Loss Foods & Drinks	Snacks

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### Steps 3 & 4 | Specify metadata and model content

- SME analysis of content to determine categories and/or tags
- Workshops with SMEs and stakeholders to gain additional understanding of content
- Card sorting exercises with business users or end customers to determine intuitive clustering and category names
- Auto-generation of “rough” taxonomy via software tool
  - Refine with SMEs and taxonomy experts
- Iterative taxonomy creation over a period of several weeks depending on size and scope of the effort

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### Metadata specification – a recipe example

Element	Data Type	Length	Req. / Repeat	Source	Purpose
Asset Metadata					
Unique ID	Integer	Fixed	1	System supplied	Basic accountability
Recipe Title	String	Variable	1	Licensed Content	Text search & results display
Recipe summary	String	Variable	1	Licensed Content	Content
Main Ingredients	List	Variable	?	Main Ingredients vocabulary	Key index to retrieve & aggregate recipes, & generate shopping list
Subject Metadata					
Meal Types	List	Variable	*	Meal Types vocab	Browse or group recipes & filter search results
Cuisines	List	Variable	*	Cuisines	
Courses	List	Variable	*	Courses vocab	
Cooking Method	Flag	Fixed	*	Cooking vocab	
Link Metadata					
Recipe Image	Pointer	Variable	?	Product Group	Merchandize products
Use Metadata					
Rating	String	Variable	1	Licensed Content	Filter, rank, & evaluate recipes
Release Date	Date	Fixed	1	Product Group	Publish & feature new recipes
Legend: ? – 1 or more    * - 0 or more					
Source: Taxonomy Strategies, LLC					
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## Step 5 | Define vocabularies

### main ingredient

Beans, Beef, Berries, Cheese, Chicken, Chocolate, Citrus, Dairy, Duck, Eggs, Fish, Fruits, Game, Garlic, Ginger, Grains, Greens, Herbs, Lamb, Mushrooms, Mustard, Nuts, Olives, Onions, Pasta, Peppers, Pork, Potatoes, Poultry, Rice, Shellfish, Soy, Tomatoes, Turkey, Vegetables, Yogurt

### cuisine

African, American, Asian, Cajun/Creole, Caribbean, Central/South American, Chinese, Eastern European, English/Scottish, French, German, Greek, Indian, Irish, Italian, Japanese, Jewish, Mediterranean, Mexican, Middle Eastern, Moroccan, Scandinavian, Southern/Soul Food, Southwestern, Spanish, Thai, Vietnamese

### special considerations

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

### preparation method

Advance, Bake, Barbecue, Braise, Broil, Freeze/Chill, Fry, Grill, Marinade, Microwave, No Cook, Poach, Quick, Roast, Sauté, Slow Cook, Steam, Stew, Stir Fry

### season / occasion

Christmas, Cocktail Party, Easter, Fall, Fourth of July, Hanukkah, New Year's, Passover, Picnics, Spring, Summer, Super Bowl, Thanksgiving, Valentine's Day, Winter

### course / meal

Appetizers, Breakfast, Brunch, Desserts, First Course, Hors d'Oeuvres, Main Course, Side, Snacks


### dish

Bread, Cake, Candy, Condiments, Cookies, Marinades, Pie/Tart, Salads, Sandwiches, Sauces, Seasonings/Spices, Soup, Vegetables

## Taxonomy creation process | Best practices

- Be aware of the competition: how they name and categorize products
- Involve engineers early: ensure that the taxonomy you're creating can be used with the technology
- Be aware of key parties' viewpoints
- After determining the high-level categories, have a midpoint check in with stakeholders to ensure you're on the right track and build ongoing consensus
- For the purposes of web design, leverage sample page layouts to show how categorization and tagging will affect page layout and content
- Remember taxonomies must **evolve** and **progress** as your business changes

## If your content is a set of products with complex attributes...



[Parametric Search](#) | [Replacement Parts Search](#)

[View Cart](#) | [My Account](#) | [Log In](#)

[Home](#) > [Broadband Products](#) > [Broadband Amplifiers](#)

[Broadband Products](#)
  
[Broadband Amplifiers](#)
  
[DSL Chippers](#)

[All Product Categories](#)
  
[Design Center](#)
  
[Buy Online](#)

# AD8320 - High Performance, High Output Power Line Driver Featuring 36dB Of Digitally Controlled Variable Gain

**Data Sheets**  
[View 8](#) 51-1106 (pdf 597K)

[Email PDF](#)  
[Data Sheet Index](#)

**Application Notes** pdf  
[\(467K\)](#)

**Evaluation Boards**

**Price, Packaging, and Availability**

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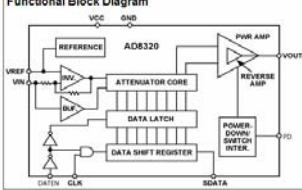
**Product Description**

The AD8320 is a digitally controlled variable gain amplifier optimized for coaxial line driving applications. An 8-bit serial word determines the desired output gain over a 36 dB range (256 gain). [More](#)

**Specifications**

Application (BTL or Cable)	Cable
Function (Driver, receiver, etc)	CATV Line Driver
Voltage Supply	5 to 12
Min Acl	-
Bit @ min Acl	150MHz
Slew Rate	-
Input Drive	-
Distortion	-57dBc
Noise	-93dBrnc
Gain	36dB
Gain Low End	-10dB
Gain High End	+26dB
Package	20-Lead PSOP

[Find Similar Products](#)

**Functional Block Diagram**


**Features**

- 8-Bit Serial Gain Control
- VARIABLE Linear Gain Response
- 36 dB Gain Range
- ±0.20 dB Gain Accuracy
- Upper Bandwidth: 150 MHz
- Single Supply Operation from 5 V to 12 V
- Drives Low Distortion Signals into 75 Ω Loads
- 57 dBc SFDR at 42 MHz and 12 dBm Out
- 48 dBc SFDR at 42 MHz and 18 dBm Out
- Supports GPI Input Control (Standard)

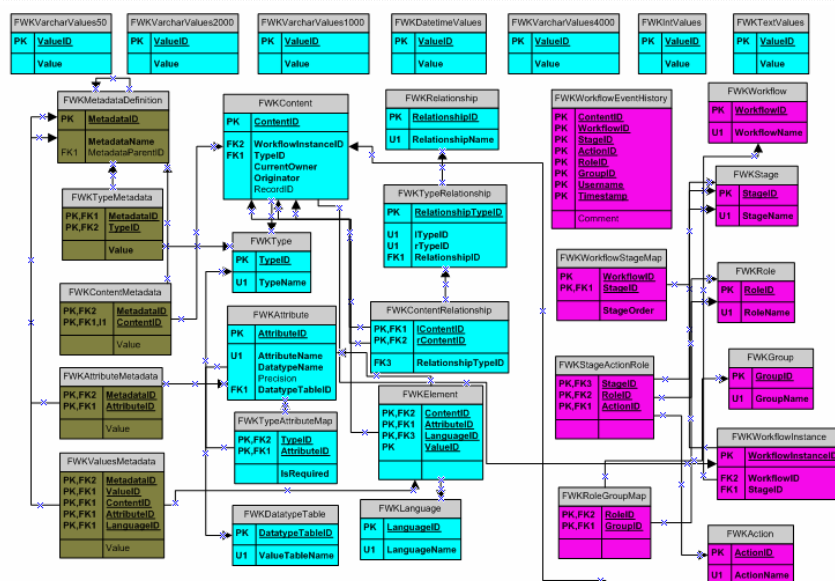
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## ...your content model might look like this



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### Steps 6 & 7 | Specify procedures and train staff

- Taxonomies must change, gradually, over time if they are to remain relevant
- Maintenance processes need to be specified so that the changes are based on rational cost/benefit decisions
- A team will need to maintain the taxonomy on a part-time basis
- Taxonomy team reports into CM governance or steering committee

### The Tagging Problem

- How are we going to populate metadata elements with complete and consistent values?
- What can we expect to get from automatic classifiers?

### Steps 6 & 7 | Specify procedures & training | Tagging

- Province of authors (SMEs) or editors?
- Taxonomy often highly granular to meet task and re-use needs
- Vocabulary dependent on originating department
- The more tags there are (and the more values for each tag), the more hooks to the content
- If there are too many, authors will resist and use “general” tags (if available)
- Automatic classification tools exist, and are valuable, but results are not as good as humans’
  - “Semi-automated” is best
  - Degree of human involvement is a cost/benefit tradeoff

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### Steps 6 & 7 | Specify procedures & training | Taxonomy testing

Method	Process	Validation
Walk-throughs	Show and explain	<ul style="list-style-type: none"> <li>▸ Approach</li> <li>▸ Consistency to rules</li> <li>▸ Appropriateness to task</li> </ul>
Usability Testing	Contextual analysis	<ul style="list-style-type: none"> <li>▸ Tasks are completed successfully</li> <li>▸ Time to complete task is reduced</li> </ul>
User Satisfaction	Survey	<ul style="list-style-type: none"> <li>▸ Reaction to new interface</li> <li>▸ Reaction to search results</li> </ul>
Tagging samples	Tag sample content with taxonomy	<ul style="list-style-type: none"> <li>▸ Content ‘fit’</li> <li>▸ Fills out content inventory</li> <li>▸ Training materials for people &amp; algorithms</li> <li>▸ <b>Basis for quantitative methods</b></li> </ul>

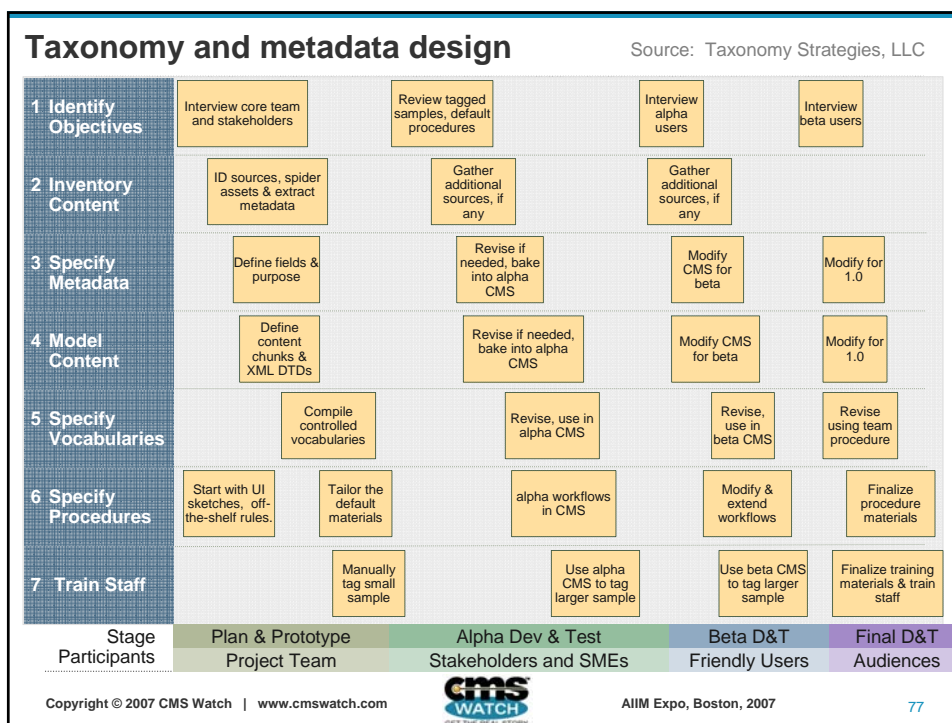
Source: Taxonomy Strategies, LLC

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## Agenda

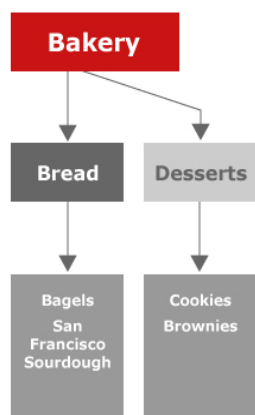
- A bit about each of us
- Level-setting of terms and concepts
  - Not just a methodology, a *way of thinking*
  - *Content models, taxonomy, meta data, folksonomies and the current state of their use*
- A few case study examples
- Creating a taxonomy and content model: step-by-step approach
- Interactive exercise
- Maintenance and governance

### Quick taxonomy exercise!

- Break into groups of 5-6
- You are creating a taxonomy for a grocery store / company
- The taxonomy will also be used to manage documents of nutritional information within the enterprise
- What you have are preliminary topic and product inventories
- In addition to the terms in your stack, you can create new terms or categories as well
- After 20 minutes, regroup and discuss approach
- If you have any questions, pretend I'm your business stakeholder

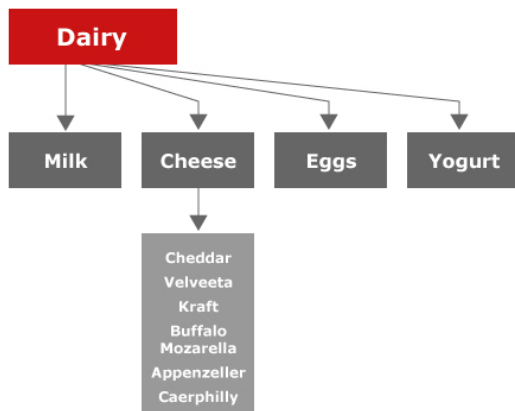
### Some possible results

#### Example 1



## Some possible results

### Example 2



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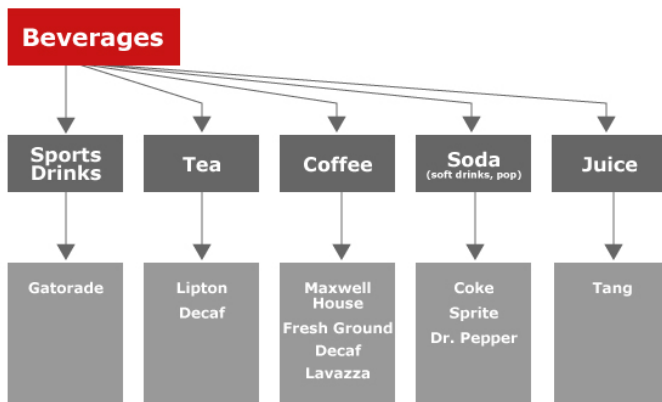


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## Some possible results

### Example 3



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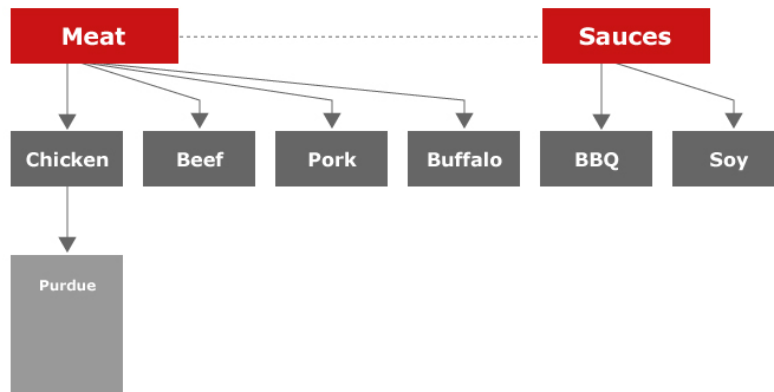


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## Some possible results

### Example 4



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## Agenda

- A bit about each of us
- Level-setting of terms and concepts
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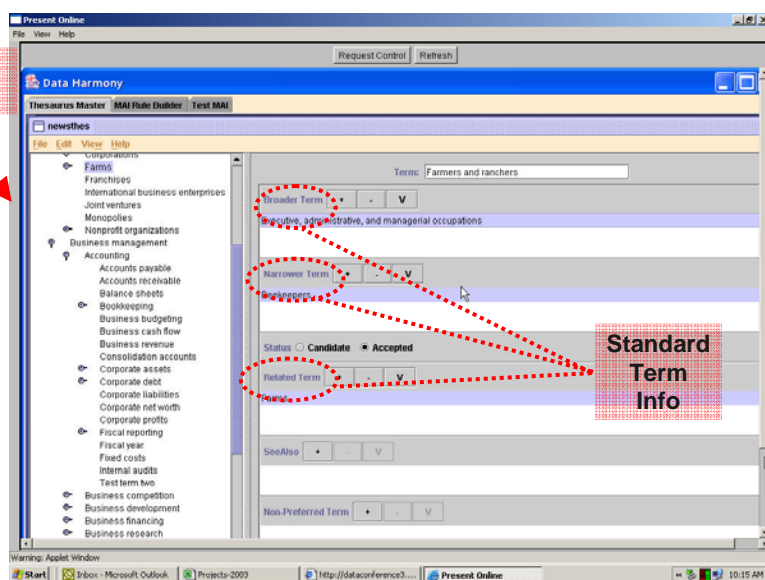


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## Maintenance | Sample Taxonomy Editor | Data Harmony

Hierarchy  
Browser



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## Maintenance | Sample Content Model Editor

**News Article - Item type properties**

Name:  Collection:

Based on:  Icon:

Media type:  Character set:

Private cache time:  min  hours  days

Public cache time:  min  hours  days ☒ Able to

Wizard panels: **Fields** Composite types Attach points Publishing flow Related types

Name	Field type	Length	Searchable	Mandatory	Editable	Web server name
Subtitle	String	150	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	subtitle
Teaser	String	500	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	teaser
Lead	String	500	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	lead
Body	String	Any	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	body
Hot Story	String	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	hotstory
Integration Map	String	Any	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	integration_map
Genre	String	30	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	genre

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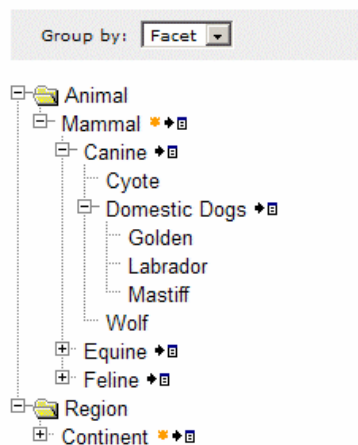
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## Maintenance | Sample Taxonomy Editors

### Browse Taxonomy - Zoological

The following lists the defined tax  
'Group By' option to view terms al



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## Taxonomy governance | Generic team charter

- Taxonomy team is responsible for maintaining:
  - The taxonomy
  - Associated taxonomy materials, such as:
    - Editorial style guide
    - Training materials
    - Metadata standard
  - Team rules and procedures
- Committee considers costs and benefits of suggested change
- Taxonomy team:
  - Manages relationship between providers of source vocabularies and consumers of the taxonomy
  - Identifies new opportunities to use the taxonomy across the enterprise to improve information management practices
  - Promote awareness and use of the taxonomy

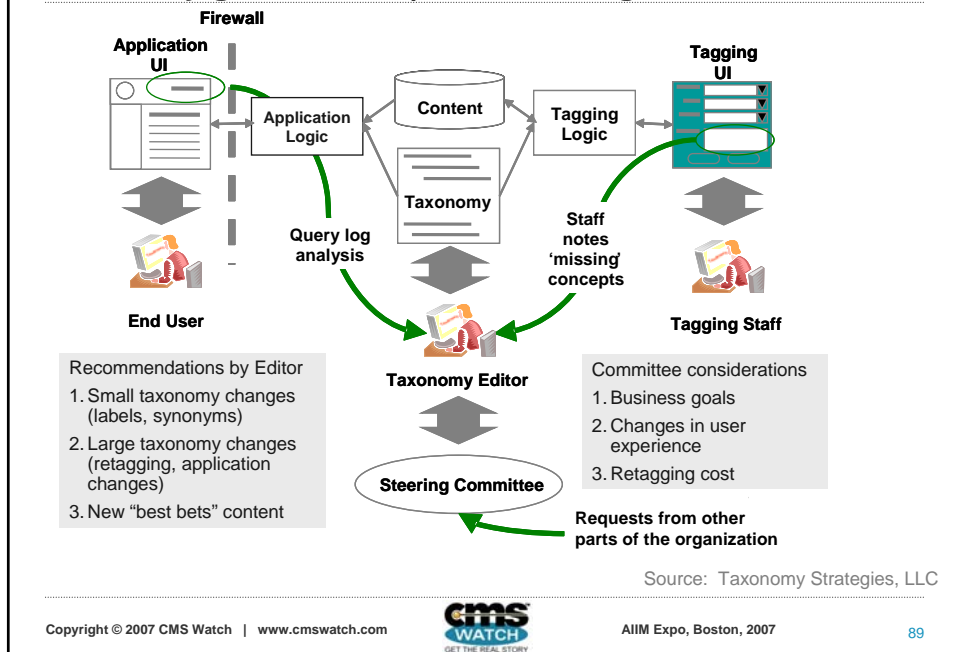
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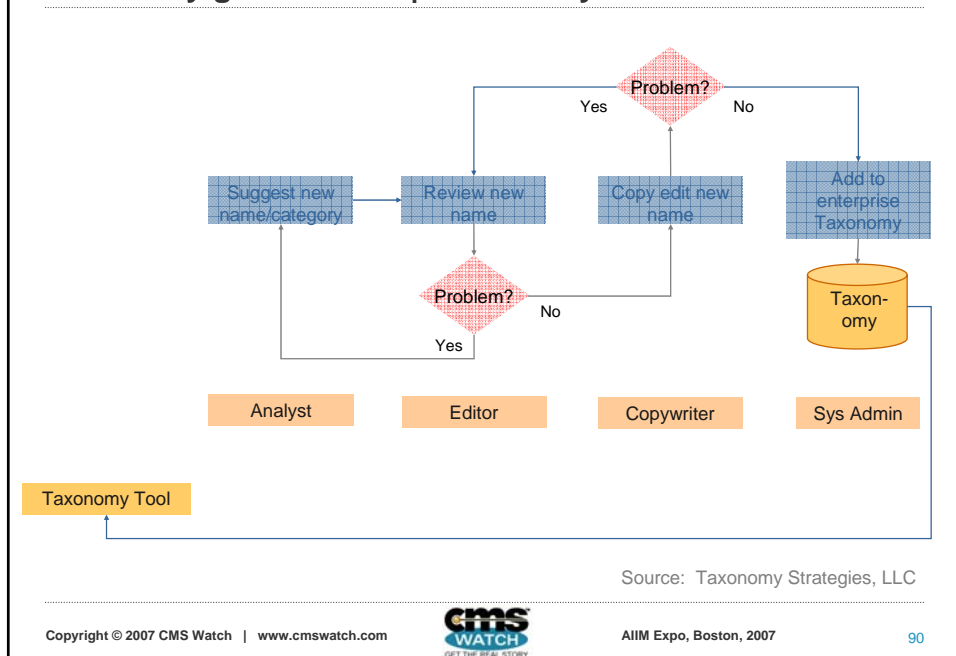
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## Taxonomy governance | Where changes come from



## Taxonomy governance | Taxonomy maintenance workflow



## Summary

- What is the problem you are trying to solve?
  - Improve search (or findability)
  - Browse for content on an enterprise-wide portal
  - Enable business users to syndicate content
  - Otherwise provide the basis for content re-use
  - Comply with regulations
- What data and metadata do you need to solve it?
- Where will you get the data and metadata?
- How will you control the cost of creating and maintaining the data and metadata needed to solve these problems?
  - CMS with a metadata tagging products
  - Semi-automated classification
  - Taxonomy editing tools
  - *Appropriate governance process*

## Summary | Seven practical rules for taxonomies

1. Incremental, extensible process that identifies and enables users, and engages stakeholders
2. Quick implementation that provides measurable results as quickly as possible
3. Not monolithic—has separately maintainable facets
4. Re-uses existing IP as much as possible
5. A means to an end, and not the end in itself
6. Not perfect, but it does the job it is supposed to do—such as improving search and navigation
7. Improved over time, and maintained

## The reliable data source is the secret to success...



- Design it so users can accomplish their goals!

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## Thank you!

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### Other references

Taxonomy Strategies (Joseph Bush and Ron Daniel)

[www.taxonomystategies.com](http://www.taxonomystategies.com)



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