

## Implementing Taxonomies Using Drupal

### Key Considerations When Implementing a Taxonomy in Drupal

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#### Is Taxonomy Important in Drupal?

With the release of whitehouse.gov, the relevance and acceptance of Drupal as an open source alternative has grown exponentially. In recent years, Drupal has been one of the more popular technologies used to implement larger high-performance web sites. Before we explore Taxonomy implementation in Drupal, it might be prudent to ask the question: Why is taxonomy important in Drupal? Because Drupal provides a simple content entry point to its content managers and a wide variety of modules to customize its behavior, it is easy to relegate the configuration and planning of a robust taxonomy to an afterthought. However, it is also precisely because content exists “out in space” and the choice of modules to organize it are so varied, that it makes sense to spend some effort planning and deploying a web taxonomy. A coherent strategy around categorizing content makes navigating and implementing a Drupal site a much easier task.

This white paper addresses a variety of challenges that may be encountered when building a Drupal taxonomy. It will also present some proven solutions to these challenges and discuss options for implementing them. Because a taxonomy is specific to the purpose for which it is designed and the organization for which it is used, these recommendations are not “one size fits all”. Rather, they are offered as a guide for making architecture decisions.

In most cases, a site-specific taxonomy workshop will help answer the questions posed by this paper and allow system architects to make educated implementation decisions. Changing module implementation strategies in Drupal is not a trivial task (back-end database structure, content revisions, and security models could all change) and understanding it up front is important.

#### Building Taxonomies

Out of the box, Drupal provides taxonomy implementation capabilities and relies heavily on them. In addition to the taxonomy module, there are other non-obvious places that taxonomy is used and must be accounted for, such as menu structure, search, and tagging:

- **Menu Structure** - The menu structure is, in itself, a form of taxonomy (categorizing content based on where users are looking for it). This structure typically uses the Menu module, but can also be based on the taxonomy itself (details below).
- **Search** - Search categories, keywords, and relevancy ranking are all based on content categorization via taxonomy. With the increased relevance of searchable content, this area is an important, but often overlooked, consideration when implementing a web taxonomy.
- **Tagging** - Many web sites prominently display content tags in prominent areas as an alternate means of determining content relevancy (e.g., tag clouds, “related posts” sections).

Implementing a taxonomy (or taxonomies) requires a holistic approach that considers each of the above-mentioned methods of categorizing content.



## Determining Your Needs

When implementing a Drupal taxonomy, the first consideration should always be simplicity. Instead of asking “*Should we have...?*,” the question should be “*Do we need...?*” At its core, Drupal is best for developing content-based web sites with flatter taxonomies.

When more complex taxonomy and security requirements are introduced, there are typically two main negative factors introduced - performance degradation and user confusion:

- **Performance Degradation** - Drupal’s modular structure allows for an extensive amount of customization and extension. However, it also means that modules are loaded nearly every time an action is taken in the system. The more modules and the more complexity in their interaction, the more tasks that must be executed. This eventually leads to increased CPU/memory usage on the web server and a greater number of queries on the database.
- **User Confusion** - Modules allow customization of the end user experience, usually for the better. However, the modules are not all developed by the same organization and do not always use the same terminology, structure, and the like. Using multiple modules for taxonomy and/or security can introduce multiple models (role-based security, group-based security) and multiple ways of categorizing content (tags, taxonomy, menu). More options means that more expertise needed when creating content and/or browsing the site.

## Managing Terms

Out of the box, Drupal provides a fairly robust taxonomy management framework in the form of the Taxonomy module (Drupal 7 improves on this functionality). This functionality allows for the creation of multiple taxonomies (vocabularies) that relate to pieces of content. Content can then be associated with these terms when it is created. While this functionality comes out of the box, it still requires some decisions and possible customization.

- **Taxonomy as Menu** - One decision to be made when implementing a taxonomy is whether or not it will also determine your site structure. If this is the case, a single taxonomy can be created that can be both applied to content and determine your menu. The Taxonomy Menu module (and other associated modules) allows taxonomy terms and hierarchy to be used as menu items.
- **Taxonomy Usability** - One of the biggest problems with out of the box Drupal is the unwieldy default implementation of taxonomy association. When content is created, standard drop-downs are used to allow users to associate taxonomy terms. With even a small taxonomy (two or three levels, 10 or more terms), this quickly becomes a usability nightmare. As such, a couple of modules have been developed to simplify the selection of taxonomy terms:
  - **Taxonomy Term Reference Tree Widget** - This module does exactly what it says, it implements a taxonomy term tree instead of the standard drop-down, making multiple selections and tiers a much easier process. This module is only available for Drupal 7.
  - **Taxonomy Tree Select and Taxonomy Super Select** - These modules are available in Drupal 6 and they add AJAX functionality for multiple selections and tiers.

## Implementing a Menu

Because Drupal does not use taxonomies to build menu structures by default, one of the most important decisions to be made when implementing Drupal is how the menu structure will be created. Often the menu is not associated at all with the actual taxonomy (taxonomy is used for tagging content rather than structuring it). In this case, it is important to consider two key points:

- **Keep the Menu Simple** - A complicated menu structure, like a complicated taxonomy, will prevent users from finding content and prevent your content creators from putting content in the right place.



- **Stick to One Approach** - There are multiple ways to build menus in Drupal and the built-in menu system and taxonomy are the two most common. User group membership, wiki-like functionality, and other options may be involved. However, the selected approach should act as the single menu for the entire site. This will prevent user confusion and possible performance degradation.

## Using Tags Effectively

Building a taxonomy in Drupal is a fairly trivial task, thanks to pre-built tools. Using it in an appropriate way, especially when it comes to implementing tags, is a bit more involved. There are common ways to implement tags as part of your user experience in Drupal, these include theming content to display taxonomy terms, building lists based on taxonomy terms, and tagadelic:

- **Theming Content to Display Taxonomy Terms** - By default, taxonomy terms are displayed on every piece of user-created content (nodes). However, the default way of displaying terms (e.g., no highlighting, a single list without context) is hardly desirable. One key consideration when designing a site layout (theme) is how, and in what context, taxonomy terms will be displayed. Some questions to ask when creating a theme include:
  - Do you have multiple vocabularies? If so, how will you differentiate this on a content item?
  - Do you want to show hierarchy for terms? If so, how? Will this take up too much screen real estate?
  - Should terms be color coded, bolded, or otherwise styled, based on their importance?
- **Building Lists Based on Taxonomy Terms** - In Drupal, this means creating lists using the Views module. A full explanation of Views is outside the scope of this paper, but it can be thought of as one of the most important pieces of a standard Drupal site. It enables a site editor to create lists of content; the term “lists” is a loose interpretation - views can create such things as slide shows, pie charts, maps, and tables. The key point is that Drupal relies on views to create dynamic lists of content. In many cases, the best way to create these lists is through taxonomy terms. When designing a site, it is important to think of the various “lists of things” you might want based on taxonomy terms so you can implement views to surface them.
- **Tagadelic** - This module can be used to build tag clouds from taxonomy terms. Tag clouds are often expected on modern web sites and could be seen as a motivator for users to correctly tag content. This module can also be used to create sidebars of popular content and to tag content in terms of its relevancy.

## Taxonomy and Search

Over the past few years, web search technology has come a long way in terms of both technical sophistication and usability. Because end users are accustomed to Google technology and Amazon.com search “faceting,” their expectations for search on all web sites have risen. As such, implementing the same features in a Drupal site has become a critical factor of its success.

There are two main places where a taxonomy is critical with respect to search - faceting and search engine optimization:

- **Faceting** - Categorizing and sorting search results (Amazon.com style search) is a relatively easy feature to implement in a Drupal site using the Apache Solr Search Integration module. This module implements a variety of customizations that allow for drill-down style search. Taxonomy is a key consideration here because it determines how the facets are built. For example, a search on the word *products* may allow facets for *men’s*, *women’s*, and *children’s* or it may allow for *good*, *bad*, and *ugly*.
- **Search Engine Optimization** - The other piece of search that is often overlooked is the categorization of content for external search engine consumption, such as Google or Bing. Public web users expect the ability to Google a web site and find what they are looking for, often without using the navigation structure that the web site owner has put in place. If the end user is





