Document Management and Document Control

This paper describes an evolving proposal for document management and document control for the Indianapolis section of the American Society for Quality.

A number of interrelated concepts are involved in implementing a document management/document control system based on a computerized database accessed through the world-wide web. An initial description of some of these concepts may be useful in understanding the proposal.

Document Control

ISO 9000 and other quality and management system standards establish a requirement for “document control”. The essence of document control is to establish and maintain a set of authoritative documents describing the functions of the organization. The implications of “authoritative” are:

Each document is “authorized” by being reviewed and approved by a person or persons designated as having authority over the functions described in the documents.

A document may be revised only after being reviewed and approved by the person or persons by whom it was originally approved (or their designated replacements).

The currently authorized version of each documents is made available (“published”) to those individuals who need them for the performance of their jobs. Only authorized documents are published. Obsolete versions of documents are removed from circulation to prevent their use.

The controlled documents are typically organized into several tiers. Different authorities offer variations on the structure, but many support an organization similar to the following:

Policy (Tier 1)

The organization’s stated intentions for its operations.

Procedure (Tier 2)

Responsibilities and processes for the organization’s operations.

Work Instruction (Tier 3)

Step-by-step instructions for individual jobs or tasks

Forms (Templates) and Records (Tier 4)

Blank forms and templates used in the organization, and records of the completion of the controlled activities

Document Management

Document management is a concept which is related to, but distinct from, Document Control. Document management refers to the storage, retrieval, and sometimes publication of important documents. Document management functions must be provided for controlled documents, but they are equally useful for documents that do not fall into the classification of controlled documents.

An electronic document management system typically provides for documents to be (permanently or semi-permanently) stored in an electronic system and located and retrieved on demand through a searchable database based on the document title or other meta-data (data about data) such as a document number, document category, department, etc.

A document management system may also provide version control capabilities. For more on this, see the Version Control section below.

Version Control

Version control is a concept that manages the evolution of a document through multiple revisions over time.

Each document is identified by some principal identifier, such as the title or a document number. Each time a document is revised, a new version of the document is created and stored. Successive revisions of each document are identified by a version number.

The system tracks when and by whom each new version is created. Typically, the author of the revision is asked to provide a description of the revisions. This information provides an audit trail for the revision of the document.

When a document is requested only by its primary identifier, the latest revision of the document is supplied. But if a document is requested by primary identifier and version number, the specified version is supplied.

Check-Out and Check-In

One problem which occurs occasionally with documents that are occasionally revised results when two (or more) people simultaneously revise different portions of a document. The problem occurs when one person saves their changes, then the second person saves their changes, overwriting the changes made by person one.

Document management systems frequently provide the ability to avoid this type of problem through a “check-out and check-in” capability. A person wishing to edit a document is required to “check-out” the document. When the revision is complete, the person saves the revision, which will also check-in the revision. If one person has a document checked out, no one else is allowed to check it out to edit it.

While this does not prevent a determined person from overwriting another person’s revisions, the probability is significantly reduced.

Proposal

The current proposal describes a web-based combined document management and document control system for the Indianapolis section of ASQ using capabilities provided by Wordpress, and the Document Revisions and WCK Custom Taxonomy Generator plugins for Wordpress.

Document Revisions is add-on software (a “plugin”) for WordPress that provides a document management system, including version control and check-in and check-out. Document Revisions creates the ability to store, index, retrieve and display documents within the database used by WordPress to store web content.

WCK Custom Taxonomy Generator is also add-on software for WordPress that provides the ability to associate custom categories with “items” stored in the database.

In combination, these two plugins allow documents to be stored and categorized, indexed, and retrieved, either individually or by category.

See Appendix 1 for a description of the proposed categories.

Operation

The operation of the system consists of three phases: document creation, categorization, and editing; document publishing, and document use.

Document creation, categorization, and editing are administrative functions performed by authorized users (e.g. SLC members and authorized designates) using the Documents interface accessible on the WordPress dashboard.

Separate work instruction will be required for document creation and editing, but each is quite simple. Essentially, all that is required to create a document is to upload the document, enter some identifying information, and check the proper category box(es). To edit a document, one clicks an “Edit” link to check out the document and download a copy, then upload and save the revised document.

Document publishing is a separate administrative function that is done through the normal WordPress functions of creation and editing of “posts” or “pages”. A document or collection of documents is published by adding a link or shortcode to a post or page.

If a single document is to be published, a link containing a URL (Universal Resource Locator) is added to the post or page. The URL is assigned when the document is uploaded to the Documents archive and always refers to the most recent revision of the document.

An example of a link is shown below with the URL highlighted in blue:

<a href=<http://www.indyasq.org/documents/2013/01/september-2012-exec-committee-minutes.docx>> September 2012 Executive Committee Minutes</a>

This results in the addition of a link to the page when it is displayed in the user’s browser. When the user clicks on the link, the desired document is downloaded.

A collection of documents may be published by using a shortcode to create a dynamic list of links on the page. The shortcode included on the post or page will be similar to the example below:

[documents doctype=”responsibility”]

The inclusion of this shortcode on the post or page causes WordPress to search the documents archive each time the post or page is displayed. Wordpress then includes a link to the current revision of each the documents that match the search criteria. In this case, links to all documents whose doctype is “responsibility” will be displayed. The link text will be the title of the document.

Shortcomings

The proposed system is not without shortcomings, however. Some of those are:

There is no interface to allow ordinary users of the web site to search the document management system. These users may only access documents through pages or posts that have been created explicitly by administrative users. A solution is possible, but requires developing custom software routines to extend WordPress.)

There is no way to associate other meta-data, such as document numbers, with documents. (A solution is possible, but requires another plugin and code revisions to certain WordPress template files.)

The check-out and check-in facility is not persistent. The document remains checked out only as long as the user has a browser window pointed at the check-out page. If the browser is closed or redirected, the check-out is lost. This forces revisions to be completed in a single sitting. Otherwise, the possibility of collisions between revisions exists. No solution to this problem is apparent, barring a revision to the Document Revisions plugin by its author.

None of these shortcomings is seen to be a significant barrier to effective use of the system for document management and document control.

Appendix 1 Document Taxonomies

A “taxonomy” is, by definition, a classification into ordered categories. The proposed system allows the creation of multiple, separate, taxonomies by which documents may be classified.

This proposal provides for documents to be classified according to three taxonomies: document type (DocType), to describe the function of the document; department, to specify who within the organization is responsible for the maintenance of the document, and for records or other documents for which it is appropriate, year.

Taxonomies can be either flat or hierarchical.

The departments taxonomy is flat and consists of each of the officers and chairs making up the SLC

Chair

Vice-Chair

Treasurer

Secretary

Arrangements

Audit

Certification

Education

Historian

Internet Liaison

Membership

Programs

Publicity

Recertification

Scholarship

Voice of the Customer

Webmaster

The document type taxonomy is hierarchical and is structured as follows:

At the top level, documents may be classified as “controlled” or “general” (for documents that may be created or changed without specific authority)

Controlled documents are further classified by the tiered structure commonly used by ISO 9000 implementations

Policy

Procedure

Work Instruction

Form

Record

Responsibility

Records are further subdivided into

SLC Meeting Minutes

Annual Business Plan (formerly Section Management Plan)

Annual Budget Plan

Audit Reports

Treasurer’s Reports

1099 Forms

Attendance

Other (to provide a category for records that don’t fit any of the others)

The “general” documents category is for documents that merit publication or archival storage and retrieval but do not require formal control. The “general” category will initially include:

Metrics

Presentations

Training Schedules

Officeholders (e.g. slates of officers and chairs)

Reference

Other

These categories will be expanded as needed. It may also be desirable to include subcategories within the uncontrolled category as well to facilitate access.

The taxonomy for years must recognize the fact that in the past, the fiscal year was July through June, but will change to January through December in 2014. There will be a transitional period from July through December 2013. Therefore, the taxonomy for years will initially be:

2011\_2012

2012\_2013

2013

2014

…

Note that the actual separator character for the categories spanning two years may not be an underscore, depending on the limitations of the Custom Taxonomy Generator plugin.