



Wiki

A Systems Programming Productivity Tool



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Project Overview

When the Baby boomers in Enterprise Computing Industry retire the industry takes the risk of their knowledge leaving with them. At SAS, we face the same dilemma: how do we maintain and transfer knowledge as key personnel retire and new programmers are hired?

At the same time, we decided to initiate a new project to improve usability, currency and accuracy of our site-specific documentation including processes and procedures. To improve usability, we wanted a solution which provides comprehensive and flexible search and navigation capabilities. To improve currency and accuracy, we wanted a solution that any systems programmer could readily use to add and update documentation in the course of their daily work without the need of a specialized documentation group. We also recognized that a documentation system with these characteristics would be a great tool capture and transfer knowledge. A wiki-based documentation was the most satisfactory fit for our requirements.

A wiki helps preserve this knowledge and bridges the gap between the experienced and inexperienced systems programmers. A wiki is a web-based community-specific library of articles. The community that uses the documentation also writes, reviews, edits, and updates the content. Because the user community creates the content the wiki is automatically tailored to that community.

Wikis originated from the need to improve and centralize reference documentation in a central location that was easily searched and updated. Wikis allow content to be structured according to users' needs, while alleviating the need for external documentation editors or technical writers.

Evolution of IBM Documentation

There are several generations of IBM documentation technology; printed manuals, the IBM BookManager document depository, PDF files on the web, and most recently the IBM Information Center . Each technology change has enabled a change more modern and usable source of documentation in an effort to correct the drawbacks of its predecessor.

Back when the Baby Boomers were young, IBM provided printed operating system (OS) manuals to system programmers. The manuals were voluminous and comprehensive but it was often very difficult to locate information. Furthermore, updates took the form of Technical News Letter which were very time-consuming to merge into the manuals. Later these manuals were provided in PDF format on IBM web sites. Giving the ability to scan the IBM repository for z/OS specific documentation. These z/OS topics include: COBOL, Batch Processing, Online Processing, Tools, Editors, Utilities, Databases and Messages.

The major advantage that IBM Manuals provide is free online IBM z/OS manuals available in PDF (Acrobat) formats on the Library Page off the z/OS Home Page. Although these books are very specific in content, they tend to lack in tutorial and example information. Tutorials and examples can be very useful when inexperienced system programmers are trying to adapt to a new process. Another disadvantage of IBM Manuals is the overly advanced content terminology used in them. This terminology increases the difficulty for inexperienced system programmers to understand certain concepts. Overall users of IBM Manuals found it to be difficult to navigate in order to find desired content.

IBM BookManager was the next step in the evolution of OS documentation. This method consisted of a family of products that allows a user to create and utilize online books at terminals or workstations. It provides the organizing or grouping of books onto bookshelves by subject or by the frequency of use. IBM used BookManager to distribute OS documentation organized into book shelves. The major advantages of BookManager were its fast bookshelf searches, the documentation is regularly updated by IBM, and it

eliminated the use of TNLs. Some disadvantages of Book Manger include a user must have prior bookshelf navigation knowledge in order to find answers they seek. An inexperienced user would not be able to function in the book shelve environment without having prior advisement on its functionality. When a System z programmer encounters an error, they are usually only provided with an error code. This makes it highly difficult to know the exact category of an error when you are only provided with an error code or message. The title of an error or problem might not be given to you initially and may take additional research to determine what issues are classified under certain categories. IBM BookManager's bookshelf keyword search is not available unless the proper book and bookshelf are accessed which can be highly difficult when one does not know the actual name or classification of the problem.

Current IBM documentation is the use of the IBM Information Center. The Information Center is the most current IBM method for delivering all IBM product documentation. The content of the Information Center is identical to what is in the traditional BookManager and PDF formats, but the structure of the content is organized in a much more intuitive tree with understandable names at each level. The information Center provides a much more powerful search capability than that of IBM BookManager.

Evolution of Site-specific Documentation

Now let's look at the tools sites have used through the years to provide their own documentation. The original manner, like with IBM, was paper-based documentation with all of its disadvantages. The next approach in which documentation was able to be organized site specifically was through the use of Partitioned Data Sets (PDS) members. A PDS member containing reference documentation would be created in a PDS that was relative to the information. This method provided resources that would be easily located when a problem occurred. The disadvantage of housing documentation in this manner was that only the user that created the PDS members could only truly identify the needed member. Another drawback of this documentation manner is there was not a living standard for the structure, the PDS libraries or their members. Each member was written specifically based on the content the user creating the documentation found to be necessary. The use of PDS member s as a documentation method was useful for users on an individual bases but not as help for users site wide.

The next step in the evolution of site-specific documentation was the construction of documentation Web sites. These web sites consisted of web pages that contain or provide links to all the internal documentation within an organization. For example the Mainframe Support Home (MSD page) at SAS Institute Inc. serves as a host web page for all processes, procedures, and other reference material for organizational specific z/OS operational tasks. It also serves as a homepage with helpful reference links to internal and external sites. One key advantage of z/OS documentation Web sites are that important documentation became navigational and secure through are password protection. The one the disadvantages of these types of sites are that at times the proper rights are not granted to the proper users. Other disadvantages of these sites is that they may contain out of date documentation, broken web links, and documents difficult to editing without recreating.

The next step in the evolution of site specific documentation is the implementation of z/OS documentation Wikis. Just as the Information Center has improved productivity by improving accessibility and

search ability of IBM documentation, wikis are able to give the same benefits and more for site specific documentation. Wikis are an excellent tool for writing, updating and searching site-specific documentation and procedures. Wiki platforms provide site-wide keyword searches and easily modifiable platform structures. A wiki can be tailored to best fit the needs of the target organization. Once the documents are in wiki articles, the information becomes globally accessible to the defined user base. The user-friendly features of this platform make it easy to use and maintain with minimal training. Wikis allow users to create web articles with identical accessibility in many different ways. Documentation on a wiki can aid in the training of newly hired programmers, provide a location to update or create reference documentation as necessary, and establish a version history for each document. Converting existing documentation to a wiki, whether MediaWiki or another wiki codebase, provides system programmers with an opportunity to increase their knowledge by reviewing existing documentation.

Wiki Background

A wiki is an organizational website that allows users the ability to freely create, edit, and link a collection of wiki articles. The main goal of a wiki is to create a collaborative websites that provides the ability to global modify documentation. A wiki can be utilized as a knowledge management system in an organization. It provides its users a platform to create and edit multiple interlinked web pages. Wikis provide a simple yet powerful reference platform with features such as categorized information, simplified editing abilities, viewable page editing history, and an easily modifiable platform structure. The implementation of a wiki can be administered with very little planning. Wikis provide a freelance environment for site development and construction. The evolution or reconstruction of a wiki can occur without causing any user impact.

The editing of wiki interlinked articles is accomplished by using any simple web browser and wiki text editor. Every website can be considered as a collaboration of interlinked pages, but the wiki allows the modification of its content. The content and structure of a wiki site can be modified based on a community's preference. Wikis are the ideal way for a group of people to coordinate and create content regardless of their geographical location. Most wikis are dedicated to a certain topic or theme. In most corporate intranets, wikis serve as a documentation repository and knowledge share points.

There are multiple types of wiki software available in today's market. MediaWiki is the most popular wiki software utilized in the global enterprise community. MediaWiki has an extensible Application Programming Interface that provides highly customizable software with over 700 configuration settings and over 1,600 extensions options. The structure of this software utilizes PHP programming language and a database backend. Its powerful features, ease of use, and configurability are what individualize this software. There are thousands of wikis powered by MediaWiki worldwide, including Wikipedia. MediaWiki is freely available distributed software that allows anyone the ability to create individual wiki pages. It can be downloaded, installed, ran, and shared without cost. It is open source software that allows the modification of its components to meet a user's preference.

The implementation of this documentation platform has been found most beneficial for multiple corporate environments. Wikis have been deployed by many companies as a content management system for internal knowledge management. Converting to wikis as a documentation tool has allowed organizations to avoid the issues that may occur if the platform is not adopted. The issues may include possible documentation lost or inconsistencies, untimely document location, excess system cost of a commercial management system, and ultimately a loss in associate productivity.

Survey Results and Testimony

A survey was conducted with recently hired system programmers to gain their opinion of the best means of gathering knowledge from experienced system's programmers. According to the survey, the other methods that are currently in use include: SharePoint, Global Repository, hardcopy manuals and web portals. 80% of the surveyed thought a central location of important processes and procedures would be highly beneficial. One of the surveyed stated "It would be a great help to have all of the information that I'm looking for in one location, opposed to searching through a number of manuals." All the system programmers that were survey agreed that documentation is highly important when working with System z architecture. One of the surveyed stated "I have never worked at a job where documentation was such a necessity". Another person surveyed stated "Proper documentation is needed for newer employees to follow in order for them to succeed". Based on the result gathered from this survey, centralized documentation is a great necessity when working with System z architecture.

Testimony: Regina Robbins

I was given the task of becoming the individual responsible for the install of SAS hotfixes for the Mainframe Support Group. The new process for installing SAS 9.2 hotfixes was completed that included a demonstration for the process with instructions. This process and instructions were very high level and was not structured in step by step manner. It simply stated the task that needed to be completed. While working through the hotfix procedure, I took notes on the extra details that were needed but not documented. Once the process had been completed successfully, I added what I created to the current documentation. I was then given instructions for installing hotfixes on a previous version of SAS which included detailed documentation specific for my group. I then merged the documentation for the previous version of SAS hotfix, my personal notes, and the new highly level SAS hotfix documentation into one document. It was then converted into a wiki article for all to use and to aid new system programmers in performing SAS 9.2 hotfixes.

Conclusion

Documentation methods have evolved over the years but have fell victim to the lacking of certain features. More commonly when one documentation feature is achieved it is at the expense of another desired feature. Wikis provide commonly desired while providing an environment that is user friendly. Wikis provide the ability to easily access, modify, create, and customize documentation for an organization. Wikis provide a means to tailor a document repository to the culture and need of an organization, unlike previous documentation methods. This platform allows the interconnecting of documents that may live outside of a wiki through the use of external links. This feature allows the legacy documentation methods such as IBM documents, System z internal websites, and PDS members to be a part of the wiki environment. Graphical images such as: pictures, charts, graphs are also able to be added to a wiki site through the use of links. This feature allows a wiki to have a more modern user environment when compared to previous documentation methods. They major advantage that a wiki provides is its overall ease of use and cost free implementation. The wiki project here at SAS has turned into ongoing process and is becoming a popular System z reference tool. The use and adaptability of the wiki as a companywide documentation reference point has met and exceeded all of its preconceived expectations.

Appendix I: Wiki Features

A wiki site provides multiple features to aid users in organizing a wiki site. The features that aid in the navigation of a wiki site include the use of namespaces, categories, subcategories, subpages, article links and redirects. Namespaces provide users with the ability to group similar articles by a high-level name. For example: The help namespace contains help articles, the Image namespace contains uploaded image files, and the Category namespace contains all categories...etc. The other type of grouping feature that a wiki provides is the use of categories. Categories are a collection of articles that include a category name and zero or more members. Categories are created by inserting a category tag (Category: Mainframe) in the bottom of an article and saved. Once a category tag is entered and saved and it does not exist, it is then created automatically. The members of a category may include articles and other categories which are referred to as subcategories. Categories can be related to one another through the use of subcategories or child categories and super categories or parent categories. To create a subcategory the parent's tag is added to the child's category page. Another type of organizational feature that a Wiki provides is the use of subpages. Subpages are articles that are located under other articles. The link to a subpage's parent article is contained on the actual subpage. A subpage may also be a parent of other subpages, which means it would have subpages of itself. Another function that are provided by Wikis are article links and redirects. Article links are a powerful and expressive way of leading from topic to topic throughout or beyond a wiki site. Links can serve as pathways to images, disk files, external sites, common wiki site articles, uncommon wiki site articles, and articles translated into other languages. Article redirects are an alternative title for an article. This is commonly used when an article has well-known synonyms. Redirects help in the organization of a wiki site by allowing articles to be found under different names.

Wikis also provides its users with other functions which include keyword search capabilities, table of contents, extensions, revision history, and special pages. Keyword search capabilities refer to the use of an engine utilized to locate specific criteria on a wiki. The wiki search engine can be tailored in behavior and scope to utilize AJAX search capabilities and database full-text search capabilities. Extensions can be used in a wiki to extend the capabilities of Wiki text. Keyword or phrases such as variables, parser functions, and tag extensions can be utilized to incorporate external resources. A Wiki sites overall behavior can also be customized with callback functions, custom hooks, and skins.

Tables of Contents displays all the headings of an article in numerical order that link to a corresponding article section. A table of contents of links is automatically generated when an article has more than three headings. The table of contents can also be controlled in multiple ways. It can be forced if an article has less than four headings and moved from its default article location to other locations. It can also be suppressed so it does not display for all users or for specific users.

Revision History is used on a wiki to track every edit made to an article. This allows a user to view all the changes made to an article. This page displays who, when, and how an article has been modified. A user is provided the option to compare old revisions to recent revisions, and also undo a revision of an article. Special Pages are resource pages that provide links to the special Wiki functions and tools. It provides users with the ability to view certain page criteria such as : maintenance reports, page listings, , users/rights page, recent changes logs, media reports, uploads page , data/tools page, redirects, high-use pages, and other special page topics pages.

Appendix II: Wiki Editing Tools

Media Wiki provides three editing tools that can be used to convert traditional documentation to Wiki-based documentation. The tool utilized to edit or convert Media Wiki pages is based on a user's preference. More advanced users may decide to use the more advanced tools, while a lesser skilled user may elect to use a simpler editing tool. A user can elect to use the rich text editor, the basic text editor, or the wiki text editor when modifying a MediaWiki page.

Rich Text Editor Tool provides a user friendly editor interface to create or edit MediaWiki pages. This editor is common to the Microsoft Office application interface found in all Microsoft software. It functions as a lower-tier application tool for those users that have minimal MediaWiki editing skills and minimal word processors skills as well. It contains toolbars common to those found in the Microsoft software ribbon. This editor is ideal for those lesser skilled MediaWiki users in the editing of MediaWiki pages. A user that possesses more advanced MediaWiki skills would be more prone to use the Basic Text Editor.

Basic Text Editor Tool provides a basic word processor interface for creating and editing MediaWiki based documentation. It provides a basic text editing interface with one simple toolbar with minimal formatting options. This interface requires familiarity with MediaWiki syntax. It provides more advanced text formatting capabilities than does the Rich Text Editor Tool. It also provides the ability to combine HTML syntax with Wiki syntax to create a more dynamic Wiki page. This editor functions as a mid-tier application tool for those users that have more intermediate MediaWiki editing skills. There is another editing tool that is utilized by advanced editors of MediaWiki pages called the Wiki Text Editor.

Wiki Text Editor Tool provides a basic text editor interface as a platform for the editing and creating of MediaWiki pages. This interface is quite similar to that of Microsoft Notepad. It is basic text editing platform that does not offer any type of toolbar for editing use. This tool requires a strong understanding of MediaWiki syntax. It also provides the capability of combining of Wiki and HTML syntax for dynamic page development. This tool functions as a top tier application tool for those users that contain advanced knowledge in Wiki page development.