SAS® Program Library - Benefits of Using the Confluence Wiki
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INTRODUCTION

SAS programmers often own or use programs that reside on different systems, maybe UNIX programs located in one storage location and Windows programs located in another storage location. Or SAS programs may reside on different file servers or in separate project folders. Bringing these programs together into one system can prove invaluable. And adding related documentation can add further value. One option to bring programs and documentation together is with a wiki. In essence, a wiki is a website that makes it easy for users to contribute pages and link them. The functionality and examples provided in this paper stem from Atlassian's Confluence wiki. SAS programs were copied to pages, Word documents were imported into pages, and PDF attachment links were added to pages.

After discussing a SAS program library and the Confluence wiki, select benefits and features will be described. These benefits and features include program backup, version control, text formatting, search, and labels.

SAS PROGRAM LIBRARY

Programs may be stored by project or by customer. Programs, formats, and macros may be placed in a single folder or many folders. Whatever storage methodology is chosen, if any, building a SAS program library should prove helpful. For this paper, a SAS program library is defined a single repository, database, or web site that contains all contributed programs and related documentation (e.g., data dictionaries, entity relationship diagrams). Developing or purchasing a custom database application to house the program library can be pursued, but acquiring wiki software can prove to be an inexpensive option offering many features.

CONFLUENCE WIKI

Atlassian's Confluence Wiki provides space where users with security rights can add and edit pages or add and edit comments. Pages can be sorted or unsorted and placed in a hierarchical or tree structure. SAS code can be copied from Base SAS or Enterprise Guide to pages using the Windows clipboard. Additionally users can add formatted or unformatted text, insert images, attach documents, or embed multimedia content. The product integrates with Microsoft Office or Microsoft SharePoint. Microsoft Word documents, PDF's, and images can all be added to pages.

As of this writing, Confluence pricing information can be found at http://www.atlassian.com/software/confluence/pricing.jsp. For a free alternative, see MediaWiki at http://www.mediawiki.org/wiki/MediaWiki. MediaWiki is currently used by sasCommunity.org.

PROGRAM BACKUP

If SAS programs are copied to the wiki and the wiki resides on a separate server, the risk of program loss (programs being deleted in error or programs being saved in error) is reduced. To restate, the programs reside in two systems. And if text or a hyperlink identifying the source location is added to the page, programs in disparate locations can be quickly found. Rather than copy programs to the wiki using the clipboard, a SAS program could be developed that would write the SAS Code to a PDF, with a corresponding hyperlink in the wiki pointing at this same PDF. Writing this program would eliminate the need to copy programs to the wiki each time a change is made. For an additional level of backup, individual pages or the whole space can be exported from the wiki to PDF, HTML, or XML.

VERSION CONTROL

Programmers may make changes and save the results, later to realize they need to recover prior work. Every time a page is updated and saved, the wiki adds a counter or a page version number. Prior versions of programs now become available for review and, if desired, restore. Click on view change to see a comparison with the prior version of the page with a change count. And clicking on View Page History reveals version numbers and dates. Click on Restore this version to replace the page.

TEXT FORMATTING

The Confluence wiki offers two editor modes: Rich Text and Wiki Markup. The default Rich Text Editor offers a row of tool icons from which to select. Some users may find Rich Text easier to use. The Wiki Markup is based on the markup language Textile. Some features are only available using Wiki Markup. Users can switch back and forth between the two editor modes.

Note that the wiki offers emoticons, so simply copying SAS programs to the wiki may not produce the desired results. For example, a colon followed by an open parenthesis, ':)', results in a happy face. Also tabs are ignored. Two options to avoid text turning into emoticons are (1) the backslash escape character and (2) the noformat macro. With the noformat macro, font colors are lost but tabs are handled properly. Under Tools, the wiki offers an Import Word Document feature. So, SAS code could be saved as a Word document and imported. This feature works well for documents with pictures, but using the clipboard and the noformat macro may be preferred for SAS code.

```
/* Emoticon is created and tabs are lost */
     PROC PRINT DATA=SASUSER.ACITIES (DROP=CO:);
     RUN;

/* Escape character prevents emoticon, but tabs are lost */
     PROC PRINT DATA=SASUSER.ACITIES (DROP=CO\:);
     RUN;

/* Noformat macro avoids emoticon and handles tabs */
     {noformat}
     PROC PRINT DATA=SASUSER.ACITIES (DROP=CO:);
     RUN;
     {noformat}
```

SEARCH

The Search box appears at the top right side of the window. A quick navigation aid drop-down will appear as the word or phrase search is entered. For a full search, press enter. If the results are too broad, use the filter options. Filter options include Where, What, When, and Who.

The search feature is helpful for standardization. Say, for example, that a variable name needs to be updated. The search feature can be used to quickly identify all programs that contain the old variable name. Also, the feature is helpful for finding a code snippet that may be copied to a new program, e.g., a data step containing the intnx function or a proc step containing transpose.

LABELS

Labels are user-defined tags or page keywords. They can be used to group pages. For example, all pages containing programs could be given the label 'code'. Or all programs that contain a macro could be given the label 'macro'. This feature can used to separate pages that mention macros from pages that actually contain macros. To add a label, go to a page and click on Edit, to the right of Labels. Type in the text and click Add. After all labels have been added, click Done. To delete a label, click on the red x to the right of the label. At the top right side of the screen, click on Browse and Labels to see existing labels. Labels added more frequently are presented with a larger font. Click on a label to see the resulting pages.

The labels feature may prove useful, when the search feature does not return the desired result. For example, searching for 'run;' returns undesired results. The parser drops the semi-colon and searches for the text 'run' only. Adding a label provides a solution to this problem.

CONCLUSION

This paper is intended to generate interest in building a SAS program library and to demonstrate some of the benefits of using a wiki for that purpose. This paper is not intended to be exhaustive on the subject. With that disclaimer, the first place to go when asked for a variable name, the location of a program, a code example, or numerous other questions, the wiki is the place to start.

REFERENCES

Confluence 3.2 User Guide, see
http://confluence.atlassian.com/display/ALLDOC/Confluence+Documentation+Directory.

ACKNOWLEDGMENTS

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DEDICATION

For Vincent DelGobbo, who suggested I write this paper, and for Bao-Chau Tran, who introduced me to SAS.

ABOUT THE AUTHOR

Leonard Polak is a SAS Programmer and Database Analyst with Wells Fargo Dealer Services in Irvine, California. In addition to SAS programming duties, he is a Confluence Wiki Space Administrator. Previously, he was as an AVP and Reporting Analyst with the Insurance Services Risk unit of Bank of America in Irvine, California. And previously, he worked for TRW, later Experian Information Solutions, in Costa Mesa, California, in roles including Statistical Analyst Consultant, Technical Support Representative, and Customer Service Supervisor. Leonard earned his MBA from California State University, Fullerton and his BS degree from California State University, Dominguez Hills. He is an Enrolled Agent and SAS Certified Advanced Programmer for SAS 9.

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APPENDIX
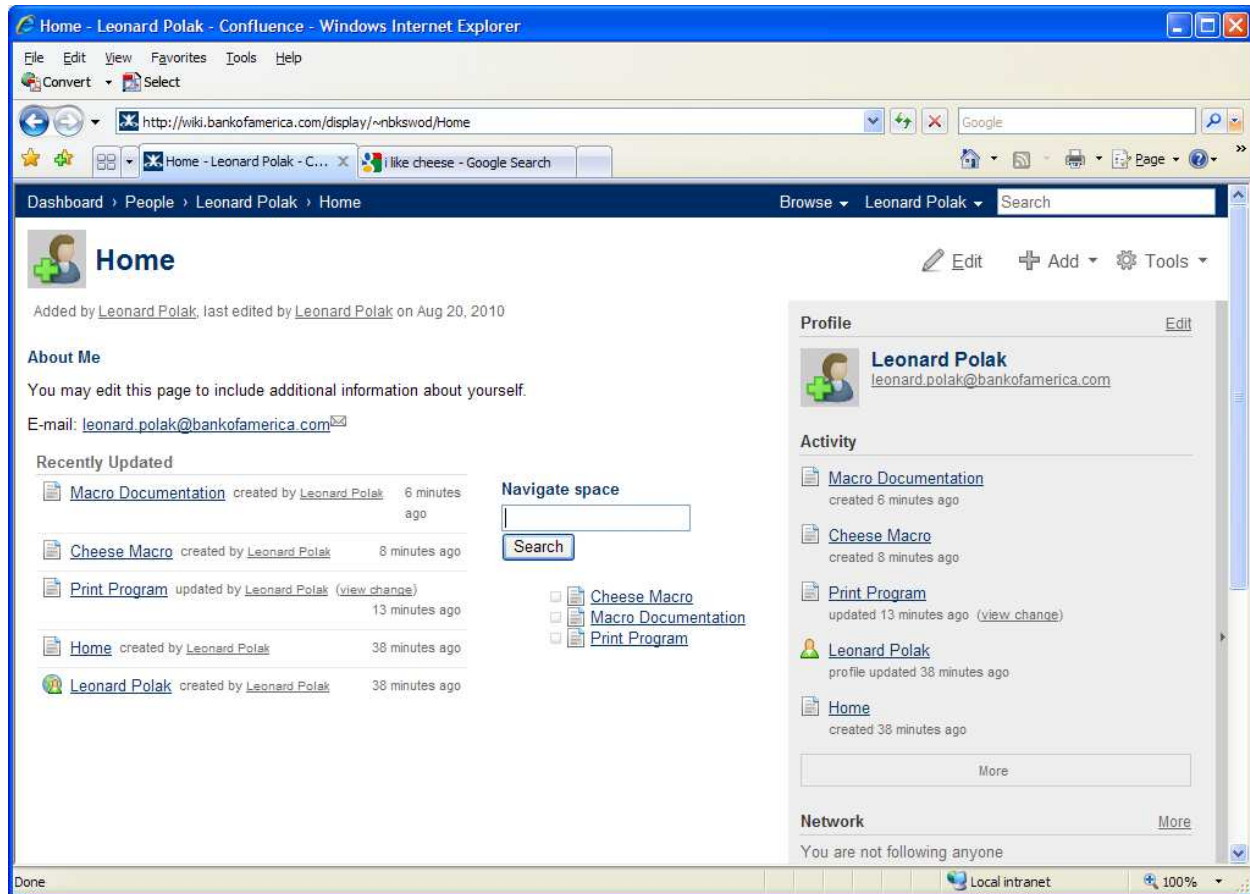
Figure 1. Personal space home page. Note the recently updated pages section plus browse, search, edit, add, and tools options.
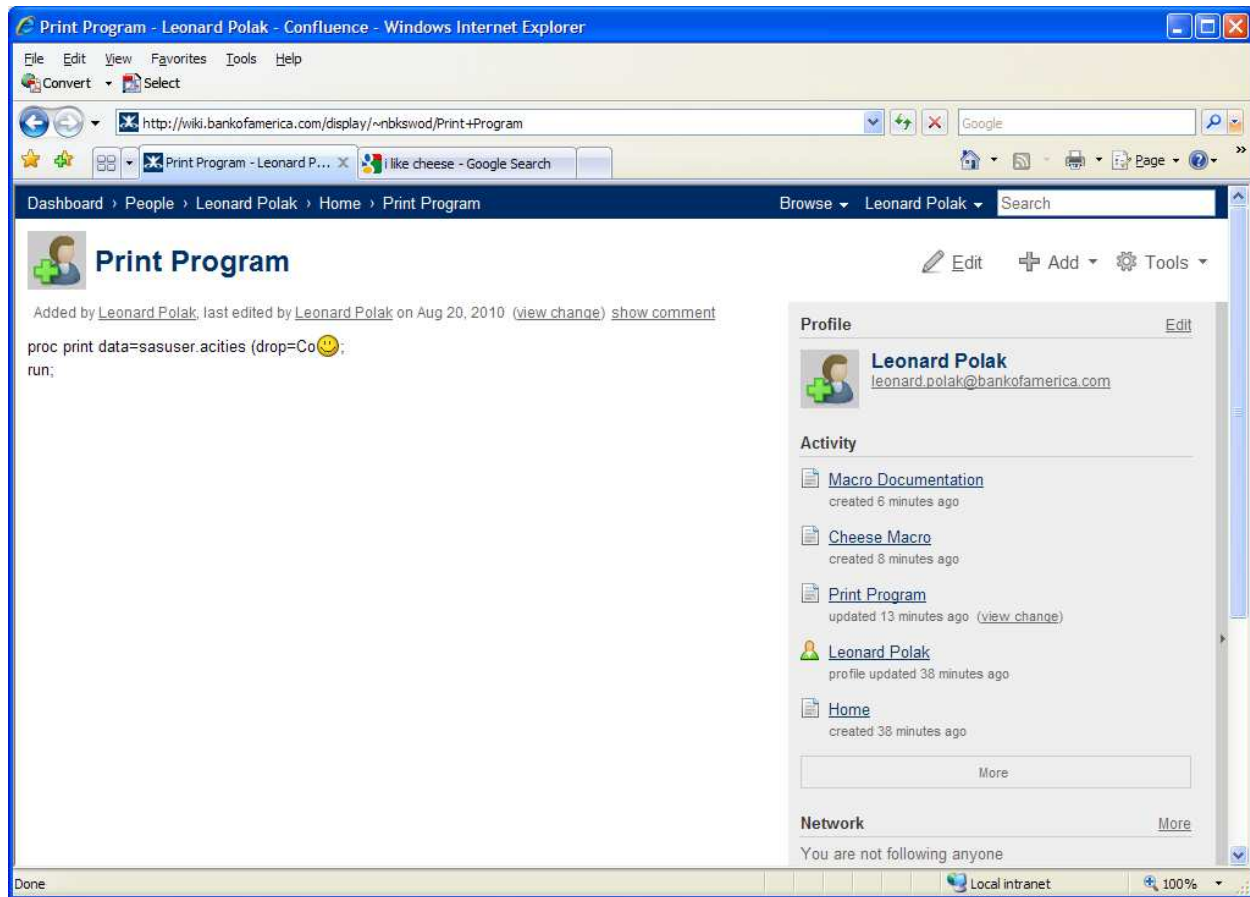
Figure 2. Select characters may result in an emoticon, rather than text.
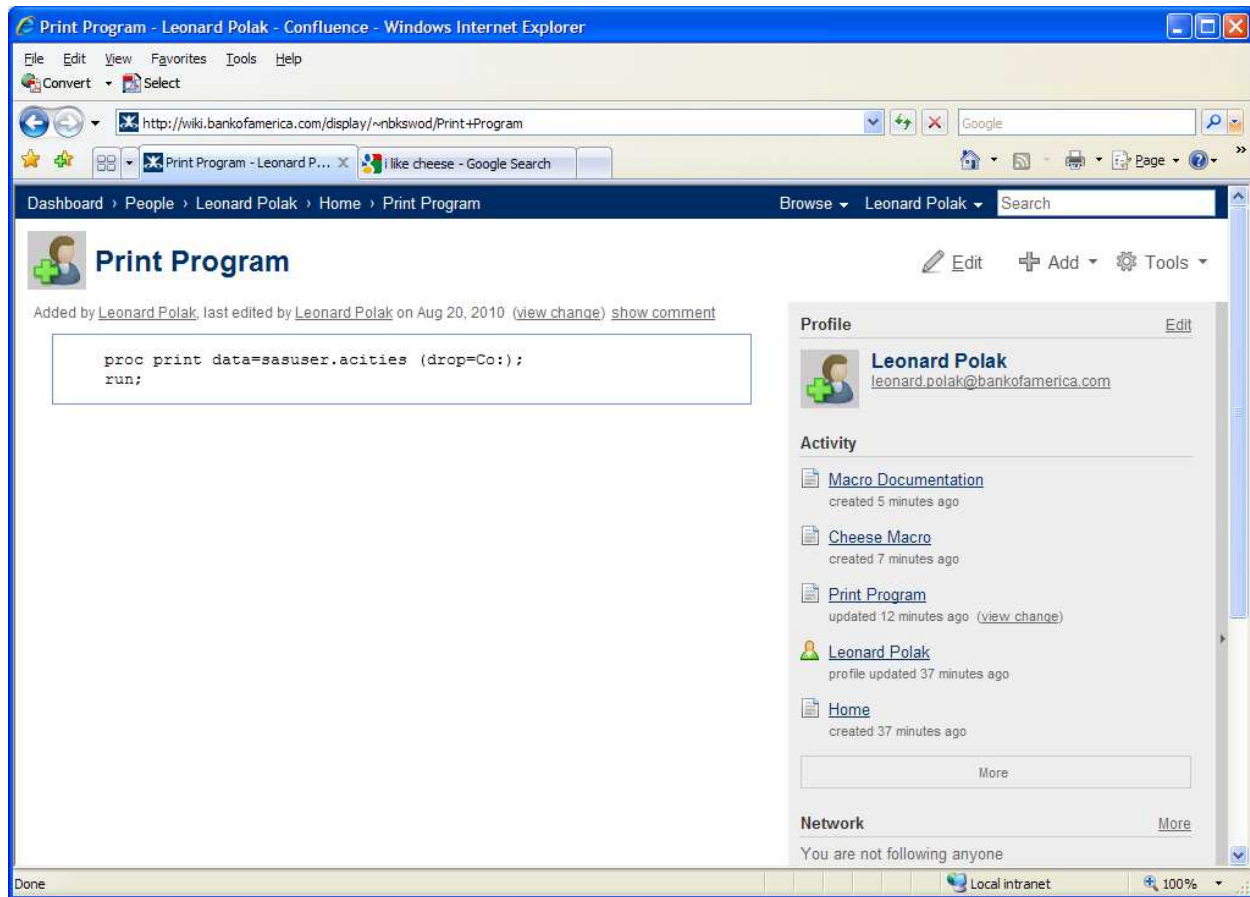
Figure 3. The noformat macro avoids emoticons and honors tabs.
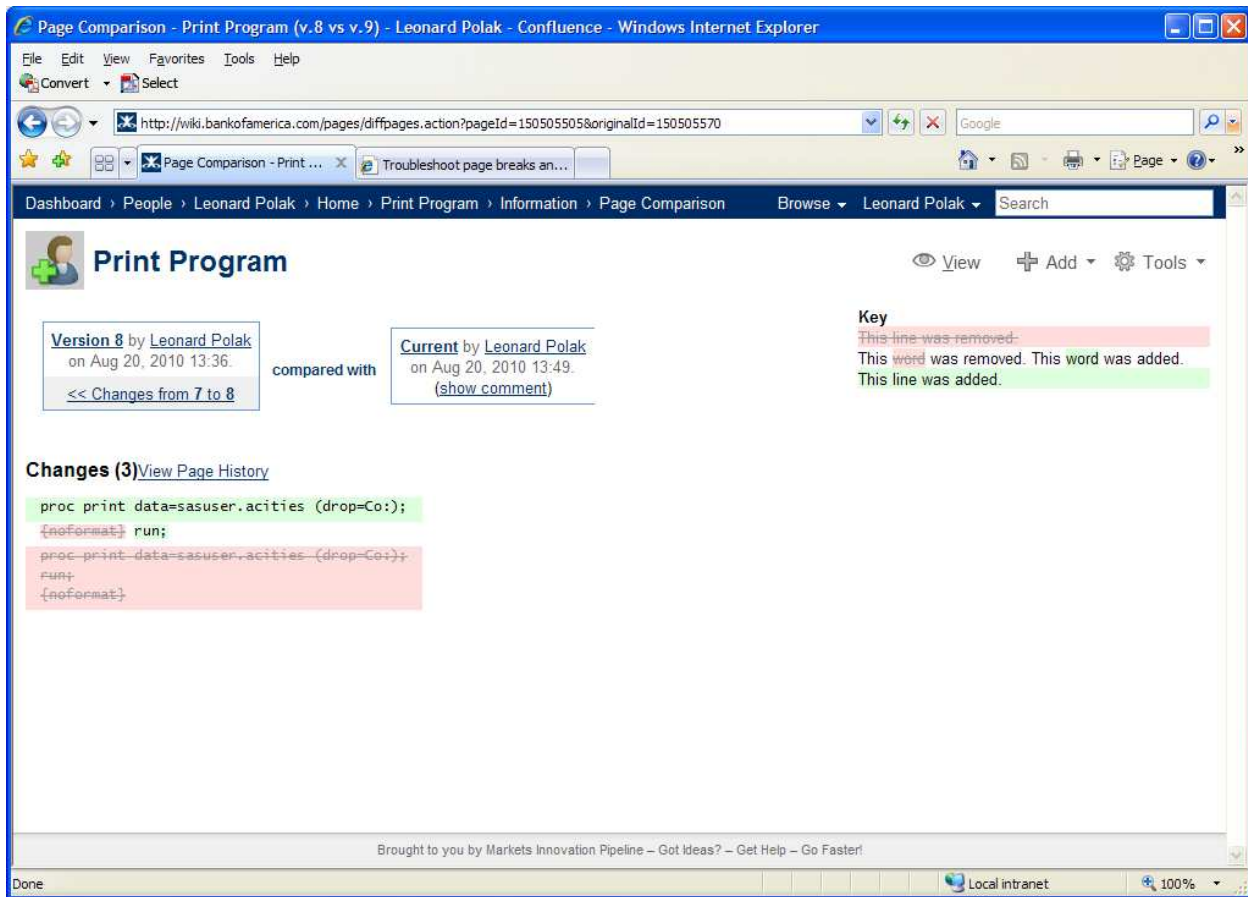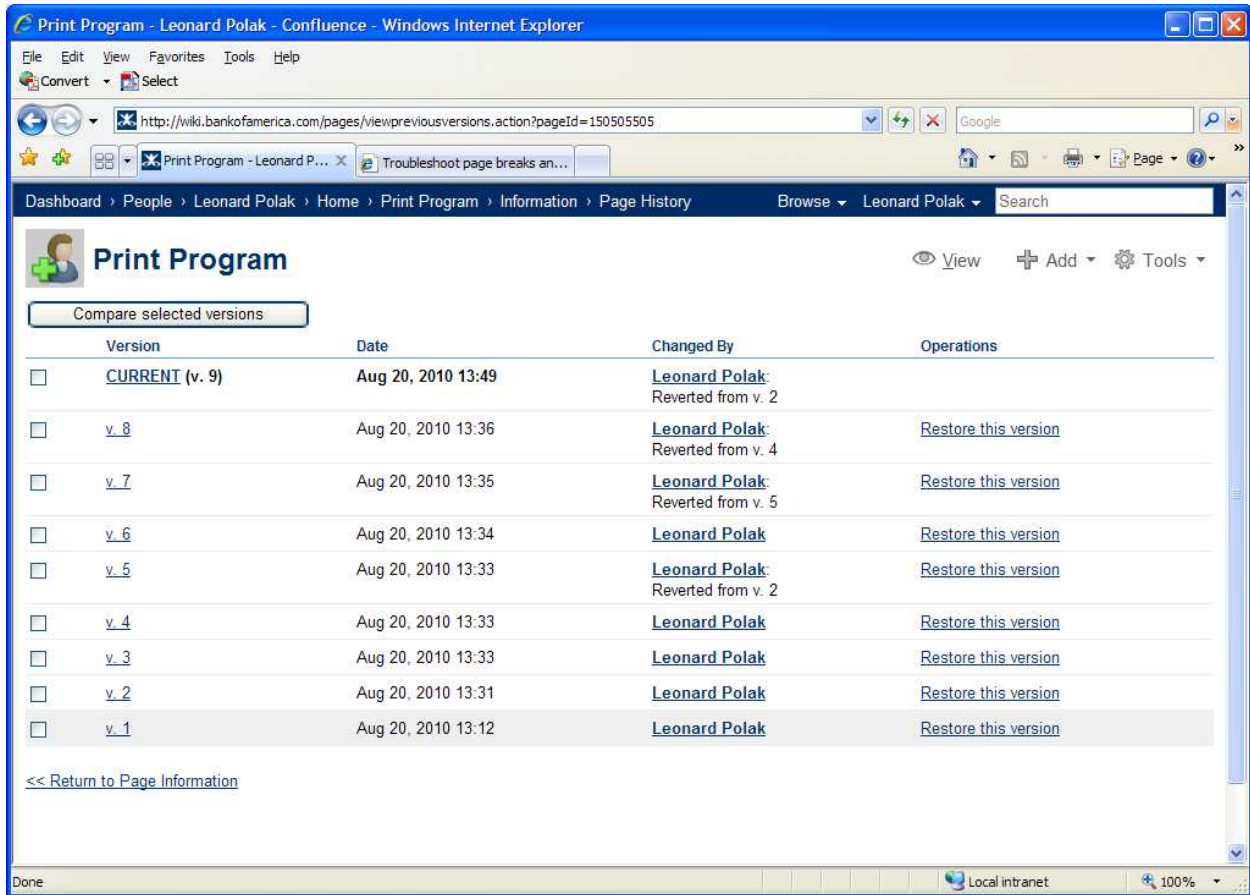
Figure 4. View change page offers a comparison of two pages at a time.

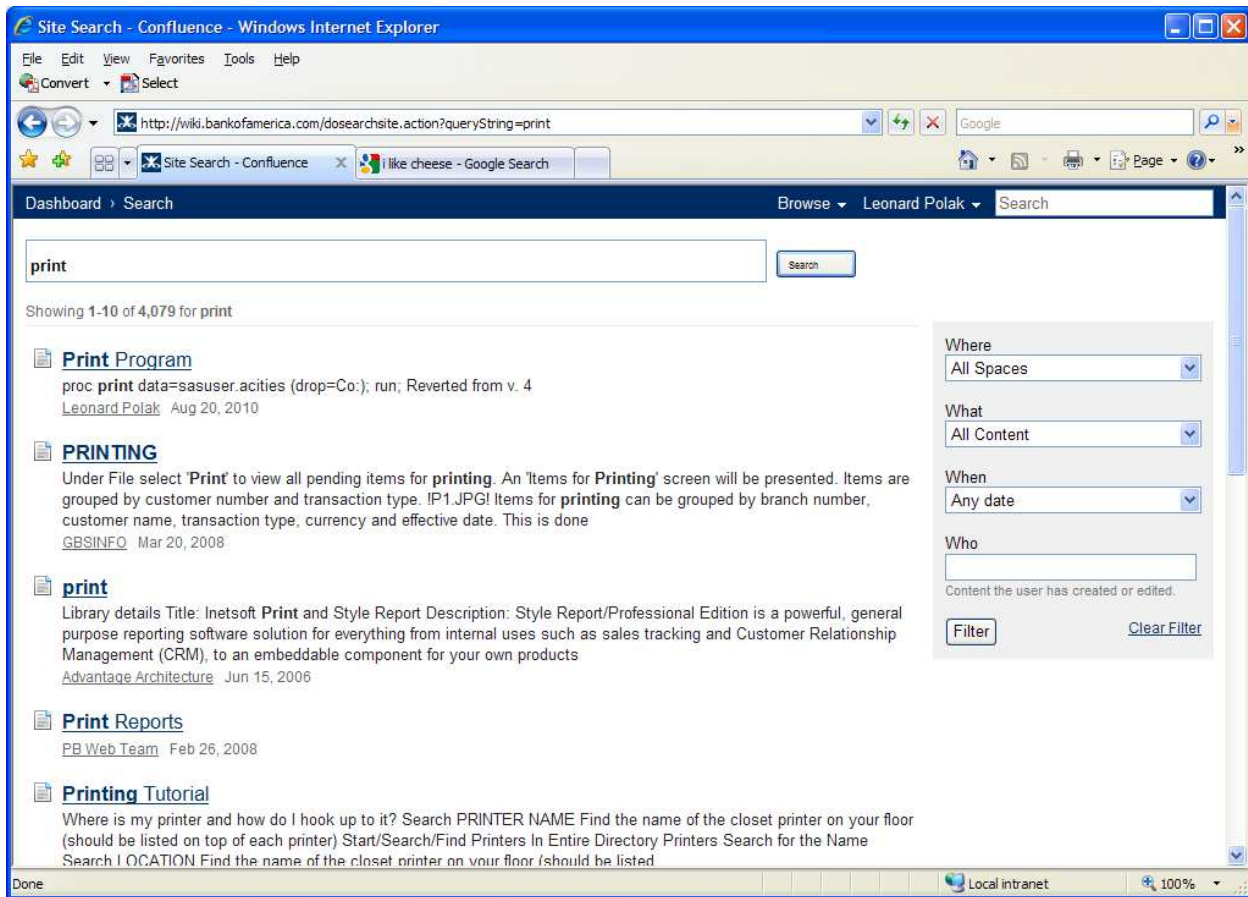**Figure 5. View page history contains a restore option.**
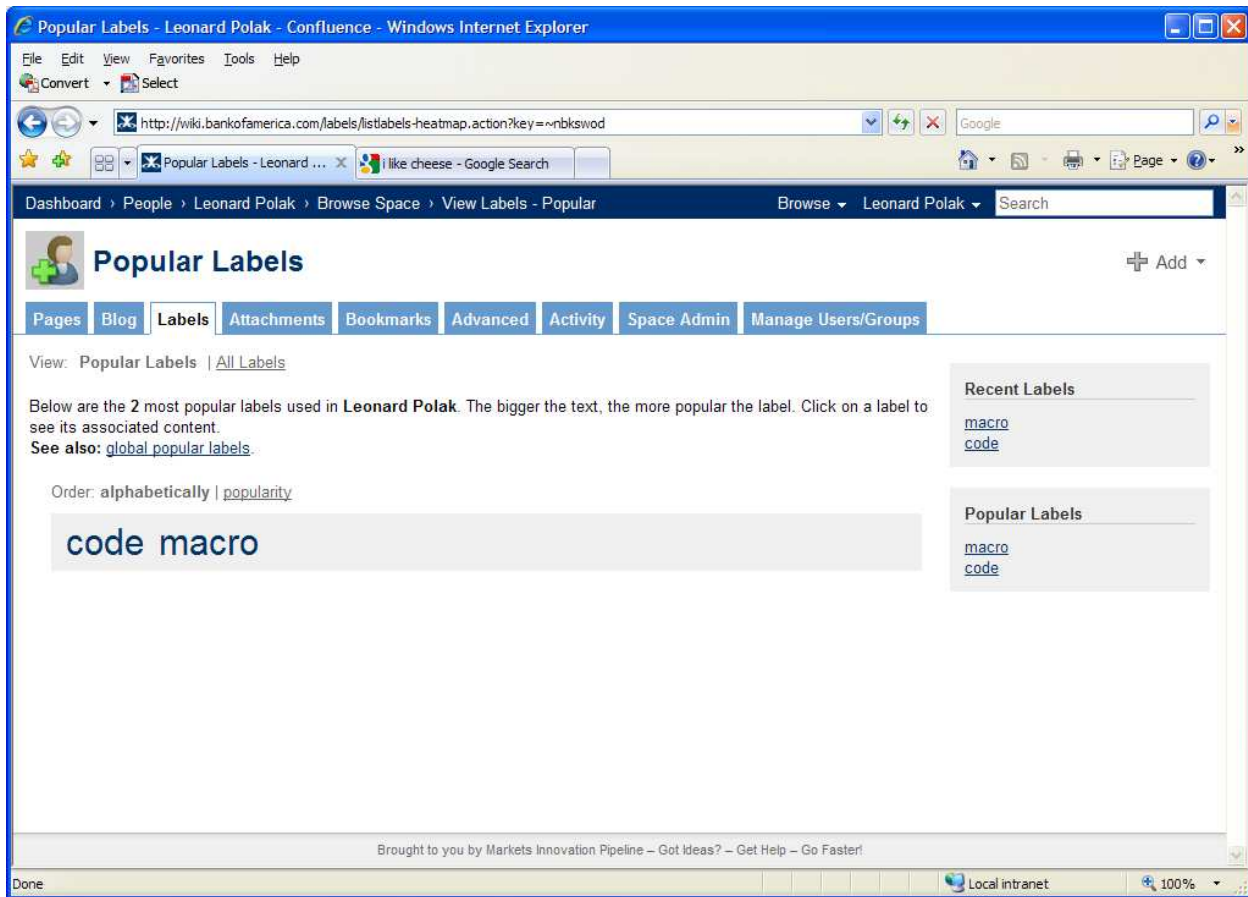
Figure 6. Full search results page.

Figure 7. The browse labels page. Click on label to get a list of pages.
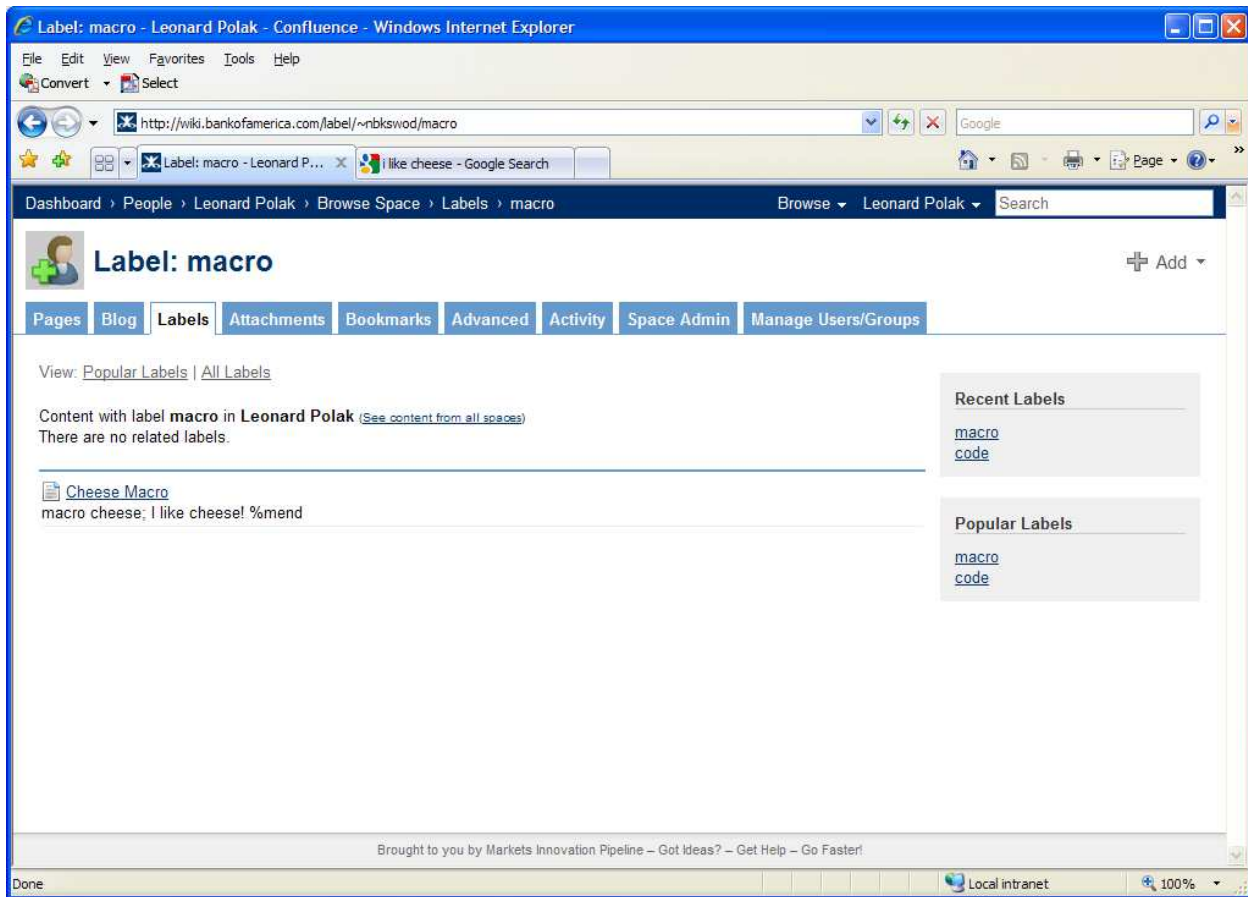
Figure 8. Search for the label 'macro'. Note that the Macro Documentation page does not have a label and is excluded from the results.