

1-1-2012

Part 1 Making Bibliographic Researchers More Efficient

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Recommended Citation

Vaidhyanathan, V., Moore, M., Loper, K., Van Schaik, J., and Goolabsingh, D. Making bibliographic researchers more efficient: tools for organizing and downloading PDFs, Part 1: iCyte, Mendeley Desktop, Papers, PDF Stacks, PubGet PaperPlane, WizFolio, and Zotero. *J Electron Resour Med Lib.* 9(1):47-55, 2012.

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eJOURNALS FORUM

Mary Moore and Suzetta Burrows, Column Editors

*Making Bibliographic Researchers More Efficient: Tools for Organizing and
Downloading PDFs, Part 1: iCyte, Mendeley Desktop, Papers, PDF Stacks,
PubGet PaperPlane, WizFolio, and Zotero*

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ABSTRACT. Researcher-writers need integrated systems to help them increase productivity. These systems should enhance the intellectual aspects of writing such as analysis and synthesis of existing research, while lessening the burden of more routine, but still necessary duties, such as bibliographic editing. Although a robust, fully integrated system for researcher-writer support does not exist, new resources are moving closer to that goal. Third party programs that connect bibliographic search results to the full text PDFs of cited articles can save time and effort and result in discoveries that may not have been obvious using approaches and processes of the past. Questions considered in this column are: What types of programs exist? What are their purposes?

How do these programs operate? Do they always behave as advertised? How do they compare? Part 1 of this exploration, published here, covers iCyte[®], Mendeley[™], Papers, PDF Stacks, PubGet PaperPlane[™], WizFolio, and Zotero[™]. Part 2 in the next issue will cover a robust and highly integrated product, QUOSA[™], including an in-depth product performance evaluation.

KEYWORDS. Bibliographic research, citation analysis, iCyte, Mendeley, Papers, PDF Stacks, PubGet PaperPlane, QUOSA, research, scholarly communication, WizFolio, writing, Zotero

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Author credits: Vedana Vaidhyanathan described tools and created the comparison chart in Part 1. Mary Moore developed the concept, organization, abstract, introduction, and conclusion. Kimberly A. Loper authored the in-depth description of QUOSA, developed the bibliography, and formatted the paper. All authors reviewed the tools described in Part 1.

A VIEW TOWARD MAKING BIBLIOGRAPHIC RESEARCH MORE EFFICIENT

When considering the process of conducting bibliographic research and writing scholarly papers, there is substantial room for increased efficiency. In former days, researcher-writers would head for the library and conduct their bibliographic searches. Days, weeks and even months could be spent searching for bound volumes in library stacks, photocopying articles and making interlibrary loan requests. The end result would be large stacks or binder notebooks of copied articles. Researchers would read each article, looking for pertinent text. Sometimes the researcher would code the articles by writing broad topic headings on the title sheet of the article. The savvy researcher would code passages with colored markers, with each hue indicating a particular theme. A well-organized researcher might then make a master list of articles and topics to find quickly the articles relevant to each topic in his outline for the new paper.

Today search engines are user friendly and many journal articles are available online, yet there still is room for improved efficiency. For researchers with linked library collections, there are often icons for the articles found from a search, indicating whether the library subscribes to the journal and has an online version of the article. Clicking the icon takes the reader to the full text. At that point, the researcher can save the article to a file or print it. Because of challenges to annotating articles electronically, many researchers still print the articles, and from there follow the same process as before with reading, color coding, annotating and indexing. When they do not print the article, researchers often take notes in a separate word processing programs,

and so must keep track of the article and the notes in many different locations.

What might be a better system? Ideally, at the time of a bibliographic search, a researcher writer could click one button, downloading all selected articles at once. The article PDFs could be placed into an electronic folder on the researcher's computer desktop. From there, they could be searched, sorted and categorized electronically. Researchers could enter one search string to find all articles with relevant terms, which would be highlighted in each article. Relevant passages could be color coded electronically, and when a researcher wanted to see all the passages on a particular topic from all the articles, they could be quickly reviewed and the researcher could add electronic annotations next to the relevant passages in the article. From that point, relevant passages could be cut and pasted into the new article, automatically importing the citations from where the quotations originated. The researcher also could run a text analysis to identify the most commonly recurring phrases in a group of articles, helping to identify common themes or emerging trends in the literature. As the article took form, the author, with the help of the integrated program, could identify the name of the journal to which the article would be submitted, considering such elements as its content, types of articles solicited, journal impact factor, and open access/public access factors. Yet aspect of the integrated program would check the article against the journal's style guide, including citation formatting. In a final step, an integrated program would then check each line of the submitted article against the content of the articles and the Web for accidentally uncited quotations. The author's productivity would be increased, and opportunities for creative analysis and synthesis would be increased and unintentional plagiarism would be avoided.

TOOLS FOR ORGANIZING AND DOWNLOADING PDFS

Although the authors are unaware of such an integrated system of support for researcher-writers, some existing resources and tools do help increase writer and researcher productivity. In this article, the tools, iCyte[®], Mendeley[™] Desktop, Papers[©], PDF Stacks, PubGet PaperPlane[™], WizFolio, and Zotero[™], which help researcher writers to organize and download PDFs of articles and related bibliographic citations, are reviewed. In the next column, a tool with even more functionality, QUOSA[™], will be reviewed in depth. These are certainly not the only such tools. The authors ask that if readers have positive experiences with other tools, they notify the corresponding author.

iCyte

iCyte is described as a Web research management tool. The iCyte Web site says it allows the user to save Web pages and PDFs “as you remember them,”¹ because Web sites can change overnight. Although one of its best features is the ability to save Web pages, along with their original links as they were at the time they were viewed, iCyte is included in this review because it also allows the user to save and annotate PDFs. The user installs a client that links to the Web sites or PDFs stored on the iCyte server. To begin, the user registers for the product and downloads two plug-ins that work with any browser. These plug-ins appear as icons located in the user’s bookmark toolbar. Once the user finds a Web site or PDF of interest, the user can highlight relevant content using a mouse. When the user clicks on the iCyte icon, the Website or PDF is stored remotely on the iCyte server, along with the metadata, tags and comments regarding the page. iCyte offers the option to save and annotate PDFs from the Web or the user’s hard drive. iCyte also allows the user to export citations from the project folder to either Microsoft Word[®] or Microsoft Excel[®]. The system includes tools for collaboration among more

than one author. iCyte may be browsed by projects, tags, and users. A disadvantage to a researcher-writer is that PDFs must be identified and stored one at a time.

Mendeley

Mendeley was founded in 2007 and the managing organization is located in London. The underlying software is proprietary. According to the Mendeley Web site, “Mendeley is a free reference manager and academic social network that can help you organize your research, collaborate with others online, and discover the latest research.”² The first 500 MB of storage are free, after which there is a cost. There are two aspects to Mendeley: 1) The desktop, which helps the user manage references and papers, and 2) the Web aspect, which helps the user contact other researchers in an area of expertise and share resources.

Mendeley Desktop allows the user to organize PDFs that are already on the user’s hard drive. The user may move each downloaded PDF into the system and Mendeley Desktop automatically links the PDF to the metadata. Mendeley Desktop also allows the user to search terms within the content of multiple PDFs and highlights the relevant terms in each paper. The “Web Importer” feature allows direct importation into Mendeley from Websites and from EndNote[®], Papers, and Zotero (the latter two described below). PDFs may be highlighted and annotated with “virtual sticky notes” (which resemble Post-it[®] notes on a screen) in Mendeley.² “Virtual groups” can be set up within the system for sharing articles and annotations. Mendeley includes a reference management feature that plugs into Microsoft Word, Office for Mac, and OpenOffice.org to create bibliographies. It also allows groups to share bibliographies and work collaboratively on papers. Mendeley may be used across multiple operating systems. It includes an entirely Web-based version for use on non-shared computers, and offers free iPhone[®] and iPad[®] applications. In the Web option, Mendeley allows the user to create an “online profile.”

Profiles can be used to discover others working in the same field and form collaborative partnerships.

Papers

Papers³ was released in 2007 by Mekentosj, a company in the Netherlands, for use with the Apple[®] operating system. A second version, Papers2, was released early in 2011. Papers allows users to search across numerous databases simultaneously, similar to federated searching. It interacts with PubMed[®], Scopus[®], Google Scholar[™], JSTOR[®], Project Muse[®], Web of Science[®], and other databases. A “search within results” capability exists in Papers2. Results can be manually moved into folders, called “collections” in Papers, or the user may create a “smart collection” based on a search query. The user can import PDF articles into Papers, which retrieves and organizes the metadata, allowing export into reference management programs. When a Web site or database is searched by Papers, retrieved documents can be selected and then saved into its archive. Papers2 includes a collaboration component called “Livfe” that allows users to share and rate articles, as well as see what their peers are sharing.³ iPhone and iPad applications are available.

PDF Stacks

PDF Stacks⁴ allows users to move the PDFs of papers on a computer into a centralized location so the user can store, organize, search and read those documents. Users also can search, tag metadata, and make comments on articles found through PubMed and Google Scholar. Although PDF Stacks is a program that will find all PDFs on the Desktop and allow for central organization, it is not a program that will download multiple PDFs resulting from a bibliographic search. Once PDF Stacks is installed on a computer, the user selects “Getting Started” to move PDFs already stored on the computer into PDF Stacks. Clicking “Find documents” automatically

seeks out all PDFs on the computer, but users must manually delete any documents from PDF Stacks that they do not want on this program, such as manuals from other programs, Word templates or company forms. After the initial “Find documents” search, other PDFs may be manually dragged into PDF Stacks. Once PDFs are imported, users read the articles in the lower pane of the program, with the list of PDFs in the upper pane. Users may conduct a PubMed or Google Scholar search within PDF Stacks and import the references and metadata.

Unfortunately, an Internet connection is required for saved search results to be viewed. Selecting a result takes the user to the PDF of the article if full text is available on the desktop or to the URL where it was found originally. If the PDF version is available, it can be manually downloaded to the desktop and then imported into PDF Stacks. On the right side there is an “Info” area that includes the title, abstract, authors and publication information about the article. A second tab in this section allows users to make notes on the article. PDF Stacks works with existing PDFs researchers may have on their hard drives, but does not offer much functionality for importing PDFs from new searches.

PubGet PaperPlane

PubGet PaperPlane^{5,6} is a Web browser extension for integrating PubMed and PubGet, a search engine and content access tool. PubGet was developed in 2007 by a Beth Israel Hospital pathologist in response to his own need to manage his scholarly research and papers. The theory is that the user can find an article in PubMed, and select PaperPlane (which must be placed in the Firefox bookmark toolbar and does not work with other browsers) to send the citation to PubGet. Once the citation is in PubGet, the full text article is displayed. PubGet PaperPlane works well if PubMed is accessed through the user’s institutional library. If accessed directly through PubMed’s site, the citation and access information will not always be correctly converted. In

that case, there is sometimes to find the article at the institutional library. Articles not shown as owned by the user's library are available for purchase through PubGet. Librarians may be concerned that when articles that are available through the institutional library are not directly displayed, library patrons may think the articles are not available and mistakenly purchase articles through PubGet's PaperStore. PubGet PaperPlane offers the ability to browse articles and download PDFs that are found through PubMed, but the inability to organize PDFs once they are retrieved, to highlight, or to make electronic notations on the articles is a drawback to this product.

WizFolio

WizFolio is called an "online research collaboration tool for knowledge discovery on its Web Site."⁷ It was developed in 2008 by WizPatent Pte Ltd in Singapore. Users can manage, share, and cite information from many formats, including journal articles, books, patents, documents and videos. WizFolio works across operating systems and if there is an institutional library license, it can directly import articles from over 200 publishers and from database searches. There is a feature for searching PubMed, Google Books, Amazon[®], Bing[™] and YouTube[™] within WizFolio. Another feature allows batch uploading of PDFs. WizFolio then attempts to retrieve the bibliographic data based on the PDF. Bibliographic data may be transferred between WizFolio and Zotero, Mendeley, EndNote or RefWorks[™]. WizFolio allows citations within its own system to work with Microsoft Word, OpenOffice.org, Google Docs[™], Zoho[®] Writer, and WordPress[®]. It highlights and tags information and has a function that identifies duplicates. It allows sharing with a drag-and-drop system and works with Twitter[™], Facebook[®], and email. When performing a PubMed search within WizFolio, an automatic alert can be established. WizFolio will re-run the PubMed search and import any new citations. Users

can also search any connected library for the full text PDF and import it into WizFolio.

Zotero

Zotero “is a free, easy to use tool to help you collect, organize, cite and share your research sources.”⁸ Produced and maintained by George Mason University, it was first released in 2006. It is open source reference management software. Users download an extension in Firefox[®] that remains in the Web browser. At its core, Zotero is a citation manager, designed to store citation information from books and journal articles. It may also be used to document web pages, artwork, films, sound recordings, bills, law cases, and videos. Once items are placed in Zotero, they can be organized into folders and subfolders. They may also be tagged for quick retrieval. Researchers may attach notes, files, and links to references in Zotero. Researchers may use Zotero to automatically add citations using an ISBN number, Digital Object Identifier (DOI), or PubMed ID (PMID). Zotero integrates with Microsoft Word and OpenOffice.org and allows sharing among groups of people. Zotero is similar to other reference manager programs, except it is free, is open source software, and it can index non-traditional media. Android[™] and iPhone applications have been designed for Zotero.

Name of Program	Operating System Compatibility	Cost of Product	Creates Citations?	Downloads PDF Documents?	Stores PDF Documents	Extras
ICyte	PC, Mac and Linux	Subscription service: \$7.99 per month or \$59.00 a year	No	No	Yes (Online)	Archives HTML, CSS and images, entirely online (no downloading). Can be used on an iPad.
Mendeley	PC, Mac and Linux	Basic version (1GB) is free, 7GB is \$4.99 per month, and 15GB is \$9.99 per month	Yes; contains citation styles for over 1000 journals	Yes	Yes	Accessible on desktop and online. Allows for collaboration and shared bibliographies. Can be used on iPad

						and iPhone.
Papers2	Mac only	\$79.00	Yes	Yes	Yes	Ability to zoom into article. Can be used on iPad and iPhone.
PDF Stacks	PC and Mac	\$39.00 one-time charge	No	Yes	Yes	Allows users to take notes on the PDFs, create collections and tag documents for quick search and retrieval.
PubGet PaperPlane	PC and Mac	Free with PubGet	No, but can export citations to Zotero or RefWorks	Yes	Yes	Retrieve a citation from PubMed and then find that article in PubGet for browsing.
WizFolio	PC, Mac and Linux	Subscription service: Starter account is Free With ads is \$25.00 per year Without ads is \$50.00 per year	Yes (five citation styles)	No	Yes (Online)	Starter account is limited to 5000 item limit, but only 50 articles per month.
Zotero	PC, Mac and Linux	Free	Yes	Yes	Yes	Open Source. Add citations using an ISBN number, Digital Object Identifier (DOI) or PubMed ID. Integrates with MS Office.

TABLE 1. Comparison of products for downloading and managing PDFs

Comparison of Findings and Summary

All of the products reviewed, except Papers, are compatible with both PC and Macintosh[®] operating systems. Papers is available only for the Macintosh. Four of the PC and Macintosh compatible products can also be used with Linux[®]. Costs for the products reviewed in Part 1 are reasonable, ranging from free (Zotero) to \$79 (Papers) for a one-time only purchase. iCyte, Mendeley and WizFolio are sold as subscriptions. Three of the seven programs include citation creation capabilities, although others link or export citations to reference managing software such as EndNote and RefWorks. Five of the programs allow online PDF downloads, but only

two provide for online storage of PDF documents. Only one of the products reviewed in this article, PubGet PaperPlane, allows downloads of multiple PDFs within a PubMed search with one click. (QUOSA, which will be reviewed in Part 2, also allows this functionality.) Some additional features included in one or more of these products are iPad and iPhone applications, note taking on PDFs, desktop and online accessibility, image archiving, and integration with Microsoft Office[®].

Research-writers can increase their efficiency by using tools to help them manage, organize, and search within the full text of articles retrieved. Several products are available to help them. Of all the tools reviewed in Part 1, the one which was the most intuitive was Papers. Unfortunately Papers is only available for Macintosh operating systems. The next part of this two-part series will provide an in-depth review and performance analysis of QUOSA. QUOSA, although not perfect, appears to be the most robust of available products. QUOSA Information Manager completes in one program features from several of the products describe in Part 1. The difference is, in order to do everything QUOSA does without using QUOSA, a researcher would need to use several tools at once.

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