



## Abstract

Scholarly publications in the field of computer science are often constructed through the use of LaTeX (a type setting system) and BibTeX (a reference management system). In fact, many large computer science conferences sponsored by organizations like ACM, AMS, or IEEE encourage or require the use of LaTeX and BibTeX. This preference for LaTeX-produced documents, however, is not consistent across scientific fields outside of computer science. Written publications in different scientific fields and several inside the computer science field, require the use of Microsoft Word documents. This translates to a time-consuming endeavor for researchers who wish to publish across different scientific fields as the bibliographic work they have developed within BibTeX does not easily transition to Microsoft Word.

WibTeX is a reference management system developed to resolve this issue. The goal of WibTeX is to allow the production of bibliographic information through BibTeX within a Microsoft Word document, using a LaTeX-style workflow. The use of WibTeX will simplify the process of preparing documents for publication by eliminating the need to reproduce bibliographic information in a new format and allow the user to construct their references within a Microsoft Word document.

## Background

When publishing research in the field of computer science it is common to be required to use BibTeX and LaTeX to construct documents. LaTeX is a document preparation system designed by Leslie Lamport in 1985 that uses a markup language to structure documents [1]. BibTeX is a reference management system, created in 1985 by Oren Patashnik and Leslie Lamport as a method to construct reference data for documents prepared in LaTeX [2].

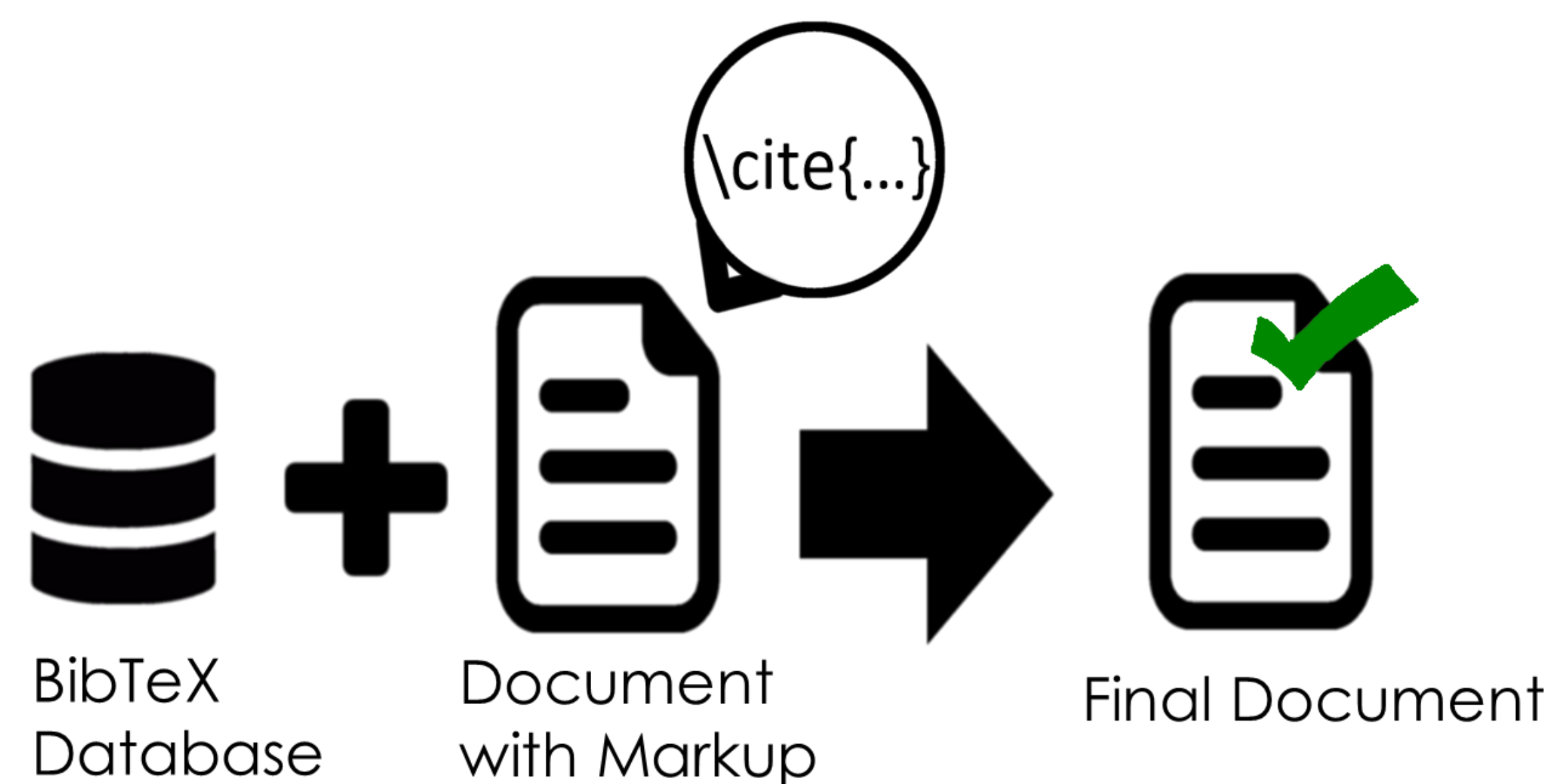


Figure 1: LaTeX and BibTeX Overview

## Problem

When publishing research outside of the computer science field it is commonly required to use Microsoft Word to construct documents. Researchers who wish to publish across scientific fields will find themselves a time-consuming endeavor when trying to transition their bibliographic work constructed in BibTeX to a format that is suitable in Microsoft Word. Unfortunately, there does not yet exist a solution for the efficient transfer of bibliographic data constructed in BibTeX to Microsoft Word.

## Project Solution

The WibTeX development team has designed the WibTeX Reference Management System to simplify the process of preparing documents for cross-discipline research publications. The System eliminates the need to reconstruct BibTeX databases by allowing the user to construct reference pages and in-text citations within a Microsoft Word Document using sources from a BibTeX database. Listed below is a figure depicting the usage of the WibTeX Reference Management System.

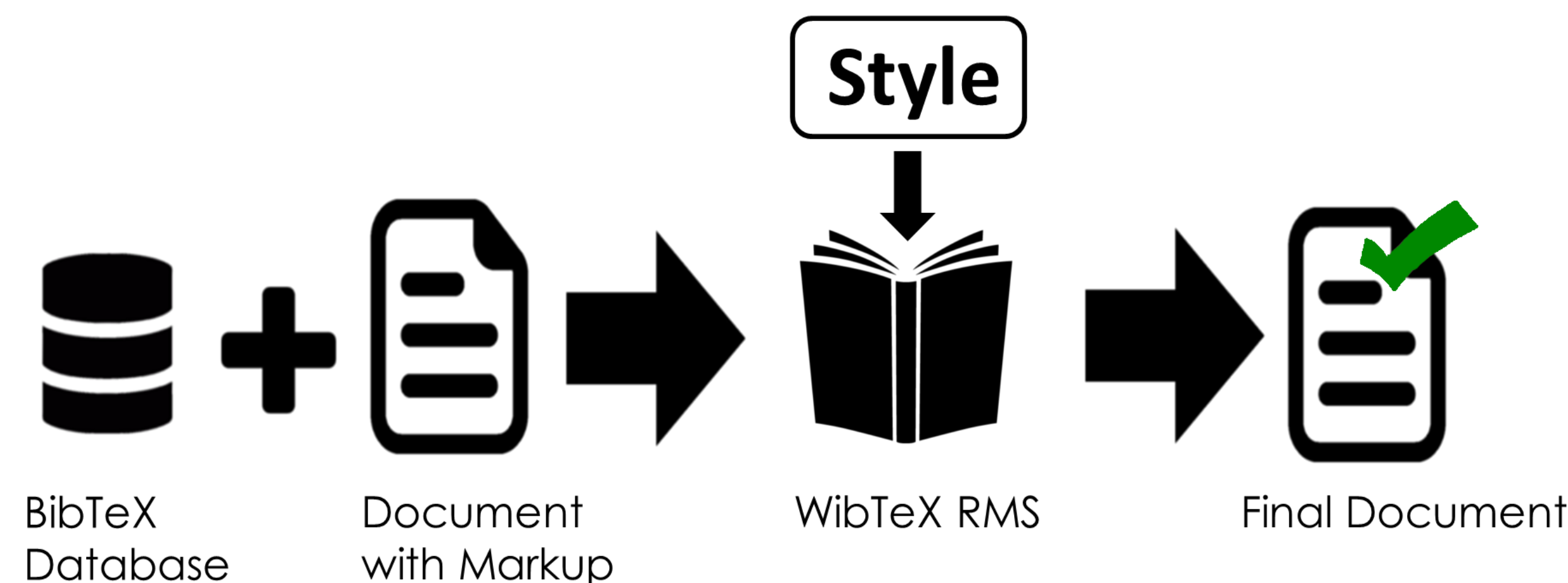


Figure 2: WibTeX RMS Overview

## Project Approach

The WibTeX Reference Management System is designed as a monolithic architecture, meaning that the entire software is self-contained and components of the program are interconnected and independent. The WibTeX RMS (Reference Management System) is developed entirely in the Python programming language. Listed below is the complete architecture of the WibTeX RMS.

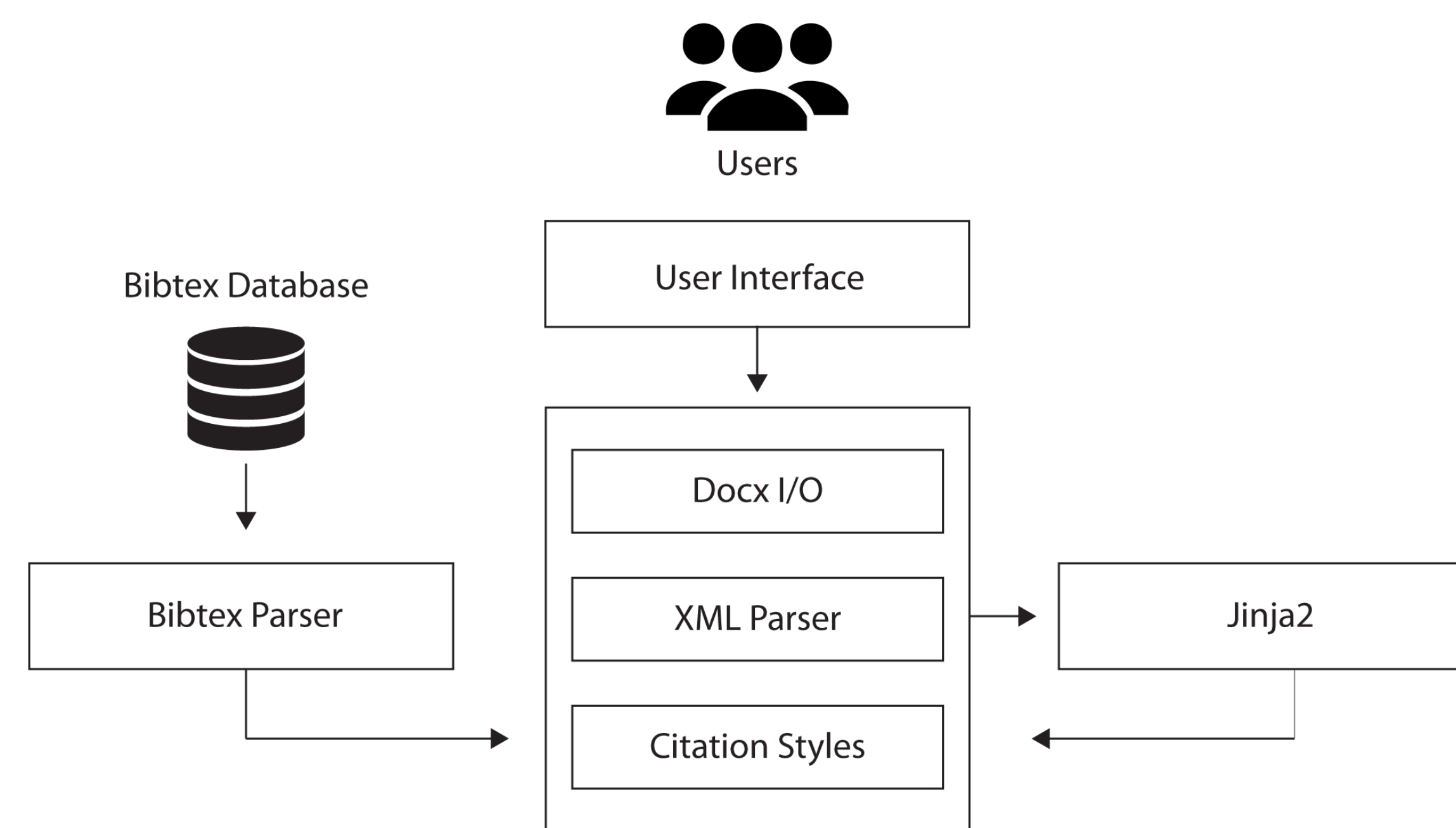


Figure 3: WibTeX RMS Architecture

### Bibtex Parser

Bibtex Parser is an external Python package that extracts reference data from a BibTeX database [3]. Bibtex Parser does not format reference data and so this must be handled by the WibTeX RMS.

### Jinja2

Jinja2 is an external Python package [4]. Jinja2 is a templating engine that allows for the dynamic substitution of textual data. Jinja2 is used within WibTeX RMS to dynamically construct formatted reference data..

## Document Manipulation

The Document Manipulation module handles all aspects of the system related to Microsoft Word documents: extracting BibTeX markup, inserting formatted reference data, and saving modified data to new Word documents.

## Citation Styles

The Citation Styles module is responsible for the generation of formatted reference data. The module receives BibTeX reference data, citation style format data, and the list of citations from the user's supplied Microsoft Word document to construct the appropriate references.

## User Interface

The User Interface module is responsible for acting as the point of entry for the user. The User Interface module is capable of deploying a graphical user interface that allows users to input Microsoft Word documents and BibTeX databases, choose reference styles, and choose the output document.

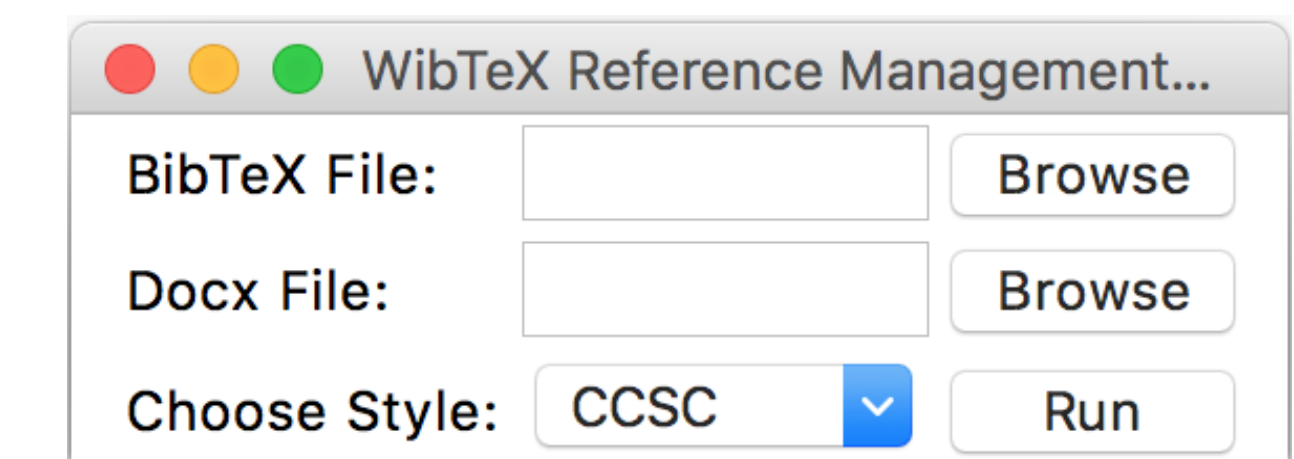


Figure 4: WibTeX RMS Graphical Interface

## Results

The WibTeX Reference Management System constructs formatted reference data that conforms to a selected citation style. Listed below is an example of an input document submitted to the WibTeX RMS and the output from the system, containing valid reference data.

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`\bibliography{bib}`



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## References

- [1] LaTeX – A document preparation system. (2017). Retrieved March 5, 2017 from <https://www.latex-project.org/>
- [2] Alexander Feder. 2006. BibTeX. (2006). Retrieved March 5, 2017 from <http://www.bibtex.org/>
- [3] Word. (2017). Retrieved March 6, 2017 from <https://products.office.com/en-us/word>

Figure 5: WibTeX RMS Graphical Demo

## References & Acknowledgements

[1] LaTeX – A document preparation system. <https://www.latex-project.org/>.  
 [2] Alexander Feder. 2006. BibTeX. (2006). <http://www.bibtex.org/>.  
 [3] François Boulogne. 2014. Welcome to BibtexParser's documentation!. (2014). <http://bibtexparser.readthedocs.io/en/v0.6.2/>.  
 [4] Armin Ronacher. 2008. Jinja2. (2008). <http://jinja.pocoo.org/docs/2.9/>.