

WibTeX Reference Management System

CS486C – Design Review



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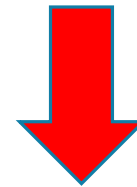
Sponsor/Mentor: Dr. James Palmer

<https://www.cefn.s.nau.edu/capstone/projects/CS/2017/WibTex/>

Reference Management

- Referenced content must be cited
- The format for citing a source depends on the reference style
- We may often cite the same source
- Software to manage references is useful

*I loved Ophelia. Forty thousand brothers
Could not with all their quantity of love
Make up my sum. What wilt thou do for her?*



References

[1] Shakespeare, William, and Cyrus Hoy. *Hamlet*. New York: W.W. Norton, 1996. Print.

LaTeX – Document Preparation

```
\documentclass[12pt]{article}
% options include 12pt or 11pt or 10pt
% classes include article, report, book, letter, thesis

\title{This is the title}
\author{Author One \ \ Author Two}
\date{29 February 2004}

\begin{document}
\maketitle

This is the content of this document.

This is the 2nd paragraph.
Here is an inline formula:
$ V = \frac{4 \pi r^3}{3} $.
And appearing immediately below
is a displayed formula:
$$ V = \frac{4 \pi r^3}{3} $$
\end{document}
```



This is the title

Author One

Author Two

29 February 2004

This is the content of this document.

This is the 2nd paragraph. Here is an inline formula: $V = \frac{4\pi r^3}{3}$. And appearing immediately below is a displayed formula:

$$V = \frac{4\pi r^3}{3}$$

BibTeX – Reference Management

```
@ARTICLE{Codishetal2000,  
AUTHOR="M. Codish and K. Marriott and C.K. Taboch",  
TITLE="Improving program analyses by structure untupling",  
JOURNAL="Journal of Logic Programming",  
VOLUME= ""43",  
ISSUE = "3",  
PAGES= "251--263",  
YEAR=2000  
}
```



```
\documentclass{article}  
\begin{document}  
\bibliographystyle{plain}%Choose a bibliographic style  
%  
Note. This is the Postscript version with plain  
bibliographic style.  
Most of the academic staff in the  
School of Computer Science and Software  
Engineering have publications in their field of e  
xpertise or research.  
The majority of the publications appear in journals or proceedings  
Articles appearing in journals may be written by  
a single author. \cite{Codishetal2000}  
%  
\bibliography{Master}  
\end{document}
```

References

- [1] CODISH, M., MARRIOTT, K., AND TABOCH, C. Improving program analyses by structure untupling. *Journal of Logic Programming* 43 (2000), 251–263.
- [2] CONWAY, D. *Object Oriented Perl: A comprehensive guide to concepts and programming techniques*. Manning Publications Co., Connecticut, USA, 2000.
- [3] HU, J., WU, H., JENNINGS, A., AND WANG, X. Fast and robust equalization: A case study. In *Proceedings of the World Multiconference on Systemics, Cybernetics and Informatics, (SCI 2000)*, Florida, USA, 23-26 July 2000 (FL, USA, 2000), International Institute of Informatics and Systemics, pp. 398–403.

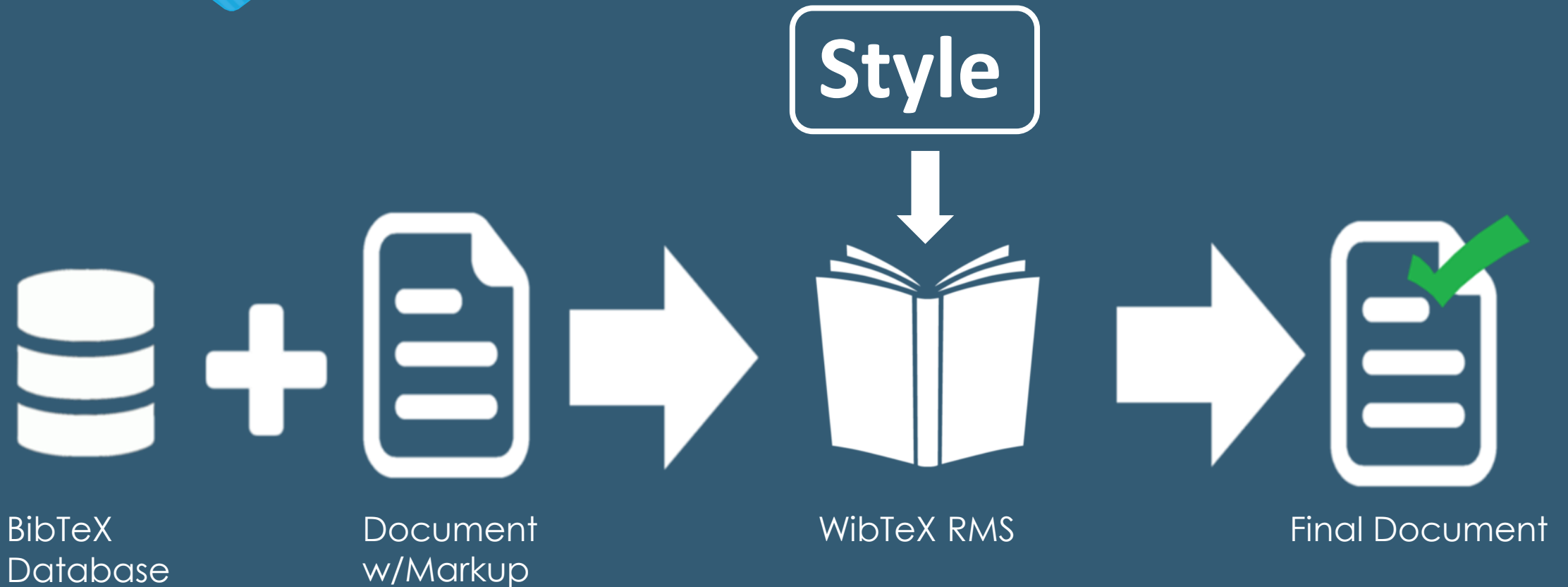
The Problem

- Publishing for Computer Science conferences often requires the use of LaTeX and BibTeX
- Publishing for conferences outside Computer Science often requires Microsoft Word
- Bibliographic data created in BibTeX does not easily transfer to Word

Our Solution – WibTeX Reference Management System (RMS)

- User can construct formatted reference data from their BibTeX database within a Word document
- User retains their working environment
- User is not tasked with converting bibliographic data

The Process



Lorem ipsum dolor sit amet, cu justo facilisi eam, impetus signiferumque est ne `\cite{duso_2012}`. Mei euismod oporteat efficiendi cu, discere corrumpit eu vix. Mei ea quot pericula vituperatoribus. Ferri luptatum est et, sed an phaedrum dissentias `\cite{jarid_2017}` Et ullum eruditi maluisset usu, sit ei saperet minimum invidunt.

Ex his detraxit patrioque, error dolores eos an. Elit errem verear qui id, rebum idque his et. Mea ex tota nemore delicata. Sed ne tation nemore. Ea usu cetero scripta aliquando. Minim aperiam ex eam, inimicus laboramus sea no, suas audire accumsan vix ea. Suas aperiam ius no `\cite{cage1987}`.

`\bibliography{bib}`



Lorem ipsum dolor sit amet, cu justo facilisi eam, impetus signiferumque est ne [1]. Mei euismod oporteat efficiendi cu, discere corrumpit eu vix. Mei ea quot pericula vituperatoribus. Ferri luptatum est et, sed an phaedrum dissentias [2]. Et ullum eruditi maluisset usu, sit ei saperet minimum invidunt.

Ex his detraxit patrioque, error dolores eos an. Elit errem verear qui id, rebum idque his et. Mea ex tota nemore delicata. Sed ne tation nemore. Ea usu cetero scripta aliquando. Minim aperiam ex eam, inimicus laboramus sea no, suas audire accumsan vix ea. Suas aperiam ius no [3].

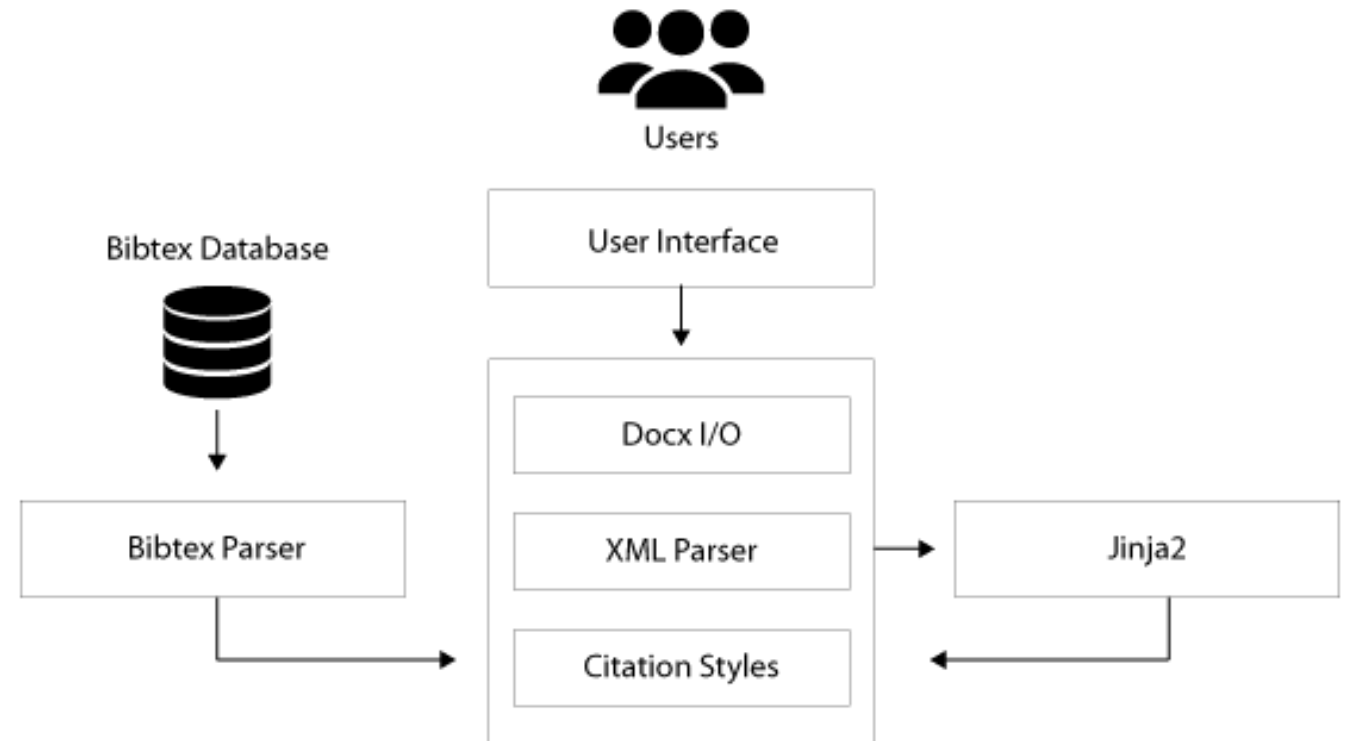
References

- [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>

WibTeX RMS – Requirements

- Process valid BibTeX markup
- Support multiple styles (ACM, CCSC, IEEE, APA)
- Support user-created styles
- Support valid BibTeX databases
- Convert LaTeX symbols to Unicode
- Input data via GUI or command line

WibTeX RMS Architecture



Architecture - Jinja2



```
index = '[1]'  
name = 'Fischer, K.'  
...
```



```
{{index}}{{name}} {{title}} {{publisher}} {{volume}} {{issue}} {{pages}}{{year}}.
```



```
[1]Fischer, K. Design Standards. IEEE intelligent systems, 14(2). 8-19. 2016.
```

Architecture - Citation Styles

- Style files contain the metadata needed to generate references
- Citation Styles module uses metadata and reference information to create formatted reference data

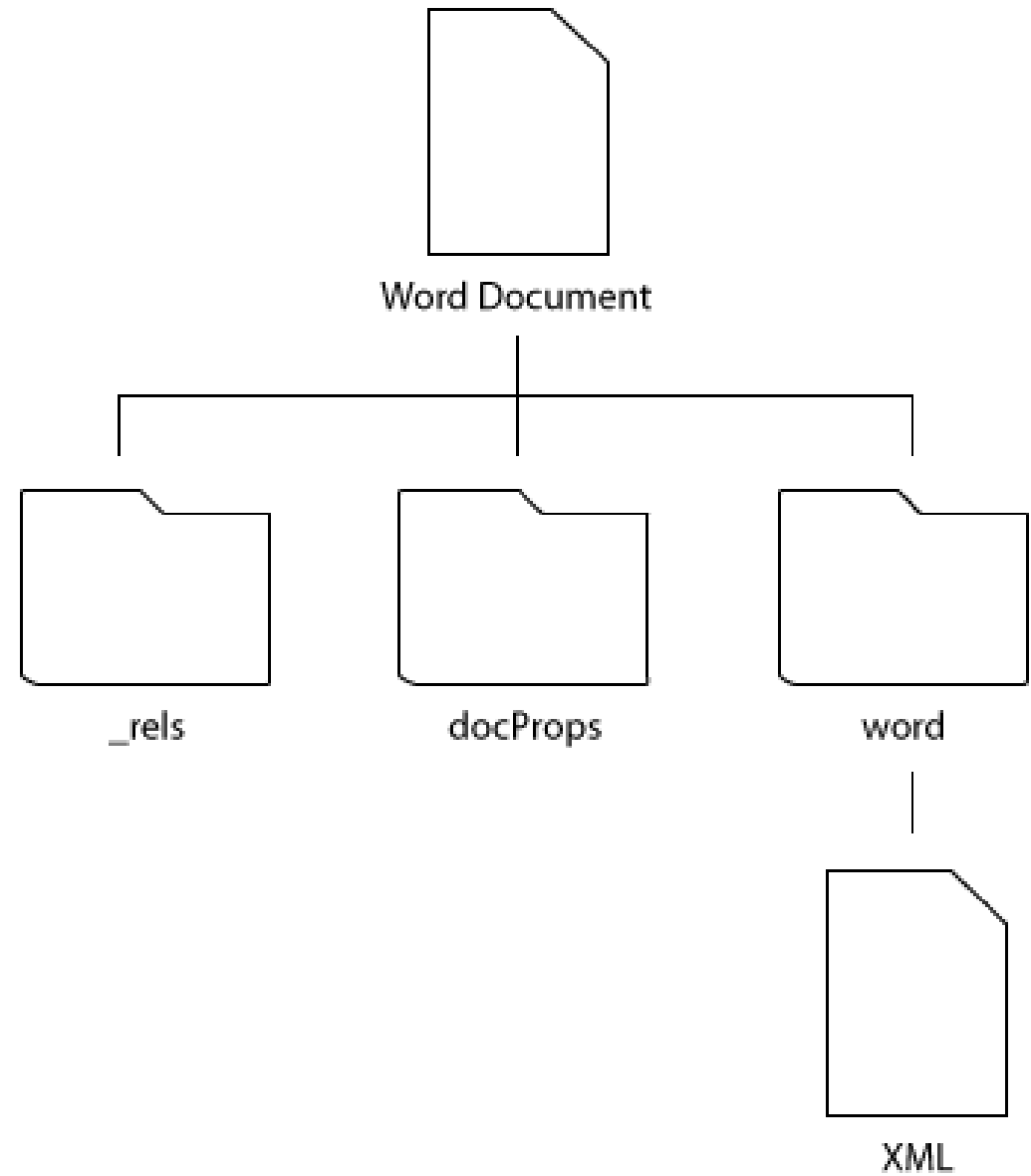
Architecture - BibtexParser

```
@article{small,  
author = {Orti, E. and Bredas, J.L. and Clarisse, C.},  
title = {A small paper},  
journal = {The journal of small papers},  
year = 1997,  
volume = {-1},  
note = {to appear},  
}
```

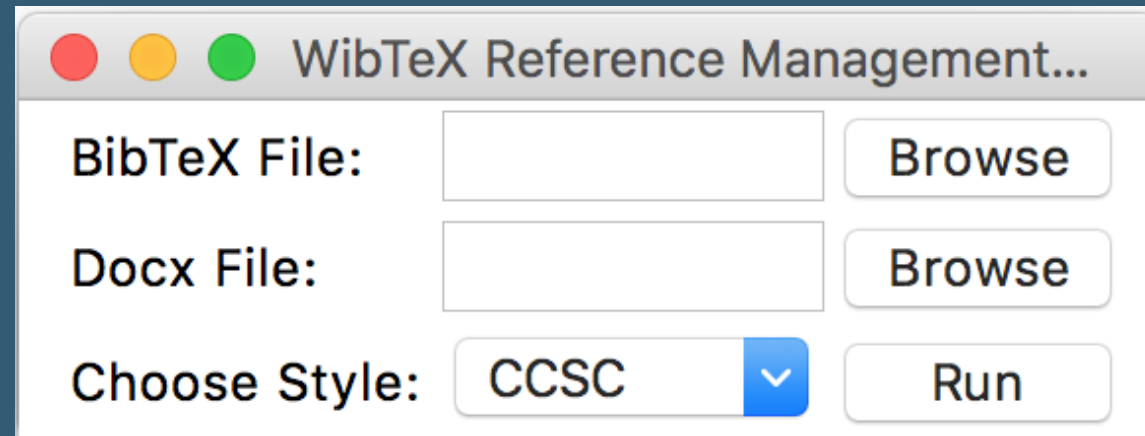


```
{'small': {'ENTRYTYPE': 'article',  
          'ID': 'small',  
          'author': ['Orti, E.', 'Bredas, J.L.', 'Clarisse, C.'],  
          'journal': {'ID': 'Thejournalofsmallpapers',  
                     'name': 'The journal of small papers'},  
          'note': 'to appear',  
          'title': 'A small paper',  
          'volume': '-1',  
          'year': '1997'}}
```

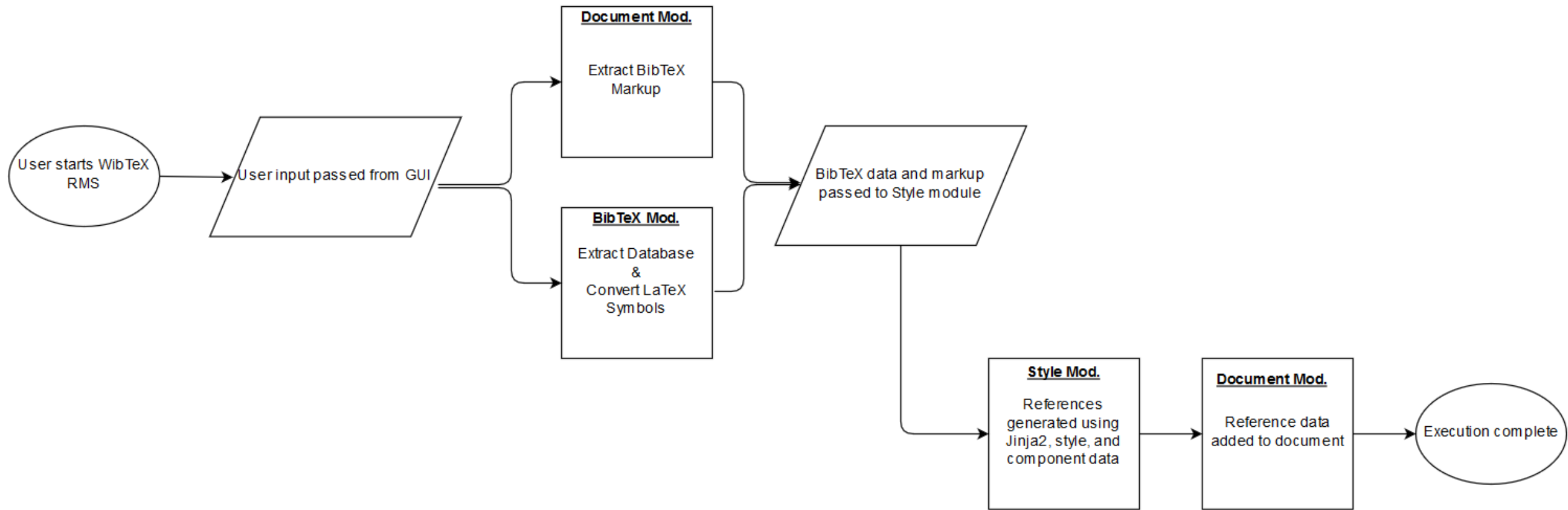
Architecture – Document Manipulation



Architecture - Graphical User Interface



Flow of Execution



Implementation Challenges

1

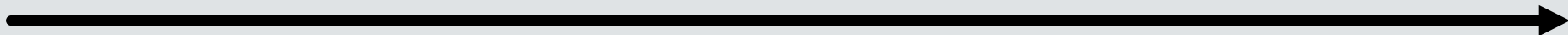
Ensuring reliable document formatting

2

Ensuring style file convention supports most reference styles

3

Handling multiple reference sections for a single document



Least Difficult

Prototype Review

- Graphical user interface
- Supports multiple reference sections
- Processes valid BibTeX syntax
- Processes BibTeX databases
- Supports CCSC style

Testing

Functionality	Method	Scope	Example
Validating BibTeX Data	Unit Test (pytest)	71 Tests	<pre>def test_article_invalid(): bib = "@article {testKey, }" assert valid_bibtex(bib) == False</pre>
LaTeX characters to Unicode	Unit Test (pytest)	109 Tests	<pre>def test_latex_unicode(): test = '\alpha' assert latex_to_unicode(test) == 'α'</pre>
Extracting BibTeX Markup	Unit Test (pytest)	5 Tests	<pre>def test_markup_extraction(): test = '<w:t>\cite{example}</w:t>>' assert extract_markup(test) == '\cite{example}'</pre>
Validating XML Output	Integration	System-wide	<pre>'<w:t>[1] Fake, Author. This is not a real book.</w:t>'</pre>

Future Improvements

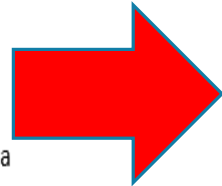
- Mobile support
- Style generation tool
- Functionality with LaTeX documents
- Functionality with HTML/CSS
 - Online services to modify live webpages

Conclusion

Lorem ipsum dolor sit amet, cu justo facilisi eam, impetus signiferumque est ne `\cite{duso_2012}`. Mei euismod oporteat efficiendi cu, discere corrumpit eu vix. Mei ea quot pericula vituperatoribus. Ferri luptatum est et, sed an phaedrum dissentias `\cite{jarid_2017}`. Et ullum eruditi maluisset usu, sit ei saperet minimum invidunt.

Ex his detraxit patrioque, error dolores eos an. Elit errem verear qui id, rebum idque his et. Mea ex tota nemore delicata. Sed ne tation nemore. Ea usu cetero scripta aliquando. Minim aperiam ex eam, inimicus laboramus sea no, suas audire accumsan vix ea. Suas aperiam ius no `\cite{cage1987}`.

`\bibliography{bib}`



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- [3] Word. (2017). Retrieved March 6, 2017 from <https://products.office.com/en-us/word>