



UNIVERSITY OF
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Improving Knowledge Management in Construction Industry by Combining Ontology with Collaborative Technologies

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July 2011

CERTIFICATE OF AUTHORSHIP/ORIGINNALITY

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

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Dongbai Xue

Acknowledgements

First of all, I would like to express my sincere gratitude to my supervisor Dr. Cynthia Wang and Professor Igor Hawryszkiewicz, I thank them for giving me the opportunity to do this research and guiding me to finish this thesis.

Secondly, I would like to thank the Faculty of Design Architecture and Building and the Faculty of IT, UTS for providing me the research environment and facilities while I study, without their support this thesis cannot be presented.

In addition, I would thank my family for their encouragement and support during the whole course of my study at UTS. Finally, I would like to thank all my friends and classmates who helped me and shared their knowledge and experiences with me whenever I needed.

Abstract

The concept of knowledge management has been introduced to the construction industry for many years. Recently, its importance is more recognized as modern construction projects are more complex and globalized. Managing knowledge assets is a challenge, especially in the construction industry, as it is characterized as a project-based business which delivers one-of-a-kind product, and it has a highly fragmented working environment.

While explicit knowledge has been handled by many existing commercial project information management systems, tacit knowledge is more difficult to handle because of its intangible nature, and so far very few computer systems have attempted to handle tacit knowledge. Tacit knowledge is usually created and transferred in a social environment, and maintained mainly in human's head. Therefore a combination of a group of advanced IT technologies should be adopted for efficient knowledge manipulating. In this research, web-based collaborative system, blogging technology, domain ontology and semantic web environment are used together to provide technology support for knowledge management. The original contribution of this research is that it demonstrates the effectiveness of using construction domain ontology in semantic blogging to promote knowledge sharing.

While focusing on technology support, this research also investigates appropriate KM framework and system architecture for small and medium sized construction organizations. A prototype knowledge management system is proposed and implemented; some knowledge management cases are presented to demonstrate how the proposed KM framework and advanced IT tools could help the KM process in the construction industry.

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