Issue Resolution and Scope Clarification in Web Systems Development: A Qualitative Study

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CERTIFICATE OF AUTHORSHIP/ORIGINALITY

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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Abstract

In Web systems development, the business environment and business processes underpin the identification of system needs, and these environment and processes are also in turn fundamentally changed by the introduction and evolution of Web systems. The web systems can be volatile as they comprise a complex set of inter-dependencies with various business and system domain characteristics. Web systems fall into the class of applications where the scope of the system under development cannot be clearly defined in the early stages of project.

This thesis presents a qualitative study of Web systems development processes by first conducting an investigation of these inter-dependencies and in particular the impacts that a Web system can have on its environment. From the identification of these inter-dependencies and their impacts, it was found that a key mechanism in supporting Web systems development is the identification and subsequent resolution of "issues". An issue is defined as a problem or a concern that Web developers face that can directly impact on cost, schedule and scope. The resolution of these issues plays a crucial role in supporting the clarification of system scope throughout development. This thesis further describes a comprehensive investigation of issue resolution processes as well as presents a taxonomy of issues and a novel issue resolution process model. This phenomenon is explored by qualitatively analysing issue handling and resolution data from industry practitioners.

Findings suggest that both tacit and explicit knowledge play an important role in resolving issues and that the capturing and sharing of knowledge is a challenging task. The research further investigates the role of knowledge and knowledge transformation in issue resolution processes. The initial issue resolution process model was validated by conducting in-depth interviews with industry practitioners that resulted in revising the process model based on the state of the practice. The findings presented in this thesis provide valuable empirical results about the challenges of the current practices in Web systems development.