

Project Risk Management in Smaller Software Teams

David A. K. Crosby

A thesis submitted to Auckland University of Technology
in partial fulfilment of the requirements for the degree of
Master of Information Technology

2007

School of Computing and Mathematical Sciences
Primary Supervisor: Prof. Stephen MacDonell

Table of Contents

| | |
|--|------------|
| Table of Contents..... | ii |
| Preamble..... | iv |
| Attestation of Authorship..... | v |
| Acknowledgements..... | v |
| Abstract..... | vi |
| Chapter I: Introduction..... | 1 |
| 1.1 Brief background..... | 1 |
| 1.2 Rationale for the study..... | 2 |
| 1.3 Objectives of this research..... | 5 |
| 1.4 Research scope..... | 6 |
| 1.5 Intended research approach..... | 8 |
| 1.6 Outline of thesis..... | 8 |
| Chapter II: Background and Related Work..... | 10 |
| 2.1 Introduction..... | 10 |
| 2.2 Importance of software project risk management..... | 10 |
| 2.3 Contextual factors..... | 15 |
| 2.4 What is done in practice?..... | 22 |
| 2.5 Conclusion..... | 24 |
| Chapter III: Methodology, Research Design and Implementation..... | 25 |
| 3.1 Introduction..... | 25 |
| 3.2 Objectives of the research..... | 31 |
| 3.3 Methodology..... | 33 |
| 3.4 Data collection method..... | 35 |
| 3.5 Instrument development..... | 43 |
| 3.6 Data analysis methods to be used..... | 50 |
| 3.7 Implementation..... | 51 |
| 3.8 Conclusion..... | 53 |
| Chapter IV: Results, Analysis and Discussion..... | 54 |
| 4.1 Introduction..... | 54 |
| 4.2 Demographics..... | 55 |
| 4.3 Phase I results and analysis..... | 56 |
| 4.4 Techniques and their effectiveness..... | 73 |
| 4.5 Phase II results and analysis..... | 104 |
| 4.6 Customer-supplier relationship issues..... | 133 |
| 4.7 Discussion..... | 144 |
| 4.8 Conclusion..... | 153 |
| Chapter V: Summary and Conclusions..... | 154 |
| 5.1 Summary..... | 154 |
| 5.2 Limitations..... | 157 |
| 5.3 Conclusions..... | 159 |
| 5.4 Implications for practice..... | 168 |
| 5.5 Future research..... | 170 |
| Glossary..... | 173 |
| Appendix A: Phase I Structured Interview Worksheet..... | 176 |
| Appendix B: Sample Demographic Data Collected..... | 184 |
| Appendix C: Phase I Results..... | 185 |
| Appendix D: Phase II Results..... | 192 |

| | |
|---|-----|
| Appendix E: Customer Relationship Risk Management - Service Manager Responses | 194 |
| References | 213 |

Project Risk Management in Smaller Software Teams

“If you are not managing risk, you are managing the wrong thing.”

- Rear Admiral Bill Carson. (Hobbs & Brown, 1987)

Preamble

The reader may find it useful to have an understanding of my background and motivation to do this work. My experience in the Information Technology domain spans more than 22 years. It includes many facets of Information Systems practice. For much of this time I worked in project teams before actually leading them. I have over 10 years experience in managing projects for various types of organisations. I also have several years experience in designing project management procedures.

I found that my colleagues and I would often wrestle with similar issues. The same sorts of project management problems appeared to repeat themselves in different organisations over a prolonged period of time. These experiences generated my interest in these issues. I was aware that these were not new problems to either practice or academia yet the same sorts of issues continued to arise in the field. I pondered whether academia could be contributing more to the improvement of the practices actually used by practitioners. Thus I became motivated to do this research.

When I began my studies my knowledge of the current state of the academic literature was very limited. I completed the equivalent of 3 master’s level papers on background work into the state of knowledge in the literature before beginning this thesis. This thesis itself suggests further areas of potential research. My quest for knowledge and improvement in practices in this important area is an ongoing one.

Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Acknowledgements

I wish to express my heartfelt thanks to the tireless support and assistance of my supervisors, Prof Stephen MacDonell and Jim Buchan. Both of them went more than the extra mile to guide and support me through this work. My primary supervisor, Stephen MacDonell was particularly encouraging and gave 110% to provide me with guidance and suggestions. It has been a privilege to have been supervised by them both.

The participants in this research deserve special thanks. Without their time and efforts this research would not have been possible. Unfortunately they must remain anonymous. However it is hoped their contributions will aid our understanding of this important topic.

I wish to thank my family who supported and encouraged me throughout. I also appreciate the various people in the school who helped and supported me, particularly Krassie Petrova, the postgraduate programme leader.

This research was approved by the Auckland University of Technology Ethics Committee on 19 April 2006, AUTEK Reference number 06/77.

Abstract

This thesis investigates project risk management issues in smaller software teams. Certain gaps in the literature are identified. There is limited literature on what risk management techniques software practitioners use. The studies that are published tend to focus on large software teams. This thesis investigates what risks these smaller teams consider to be important. It also investigates what techniques are perceived to address these risks and how effective those techniques are considered to be. One of those risks is found to be of primary importance, yet this risk is not suggested by the project management literature. This thesis goes on to conduct a more in-depth exploration of that specific risk in the context of these smaller teams

Interviews were selected as the most appropriate method to achieve the objectives of the thesis. Nineteen interviews in eight software organisations are conducted to collect data for this thesis. Three different perspectives on project risk were investigated. Those were the perspectives of the; service managers, project managers and developers. Hence a large store of rich information is collated. The results are analysed and a rich set of information is presented in this thesis.

As a result of this research it is suggested that smaller software teams may find it useful to consider the 16 risks discussed in this research and how applicable those risks are to their individual organisation. Service managers may need to do more to raise the awareness of the importance of risks associated with ‘customer relationship issues’ within their own organisations.

Three risks stood out as areas where future research might be most fruitful. They were; customer relationship issues, introduction of new technology and unrealistic schedules and budgets. Risks related to customer relationship issues were of particular significance and have tended to be over looked in the project management literature. It is submitted that research into standard project risk management approaches may need to be combined with business risk management approaches to gain a full understanding of the risks faced and addressed by these smaller teams.