

UNIVERSITI TEKNOLOGI MARA

**WEB SYSTEMS ENGINEERING FOR
MAINTENANCE MANAGEMENT
SYSTEM USING SCRUM**

ZUNAWANIS MUSTAFA

IT Project submitted in partial fulfillment
of the requirements for the degree of
Master of Science in Information Technology

Faculty of Computer and Mathematical Sciences

July 2016

ABSTRACT

The nature of software industry development cycles started with the initial study regarding the current problems arises from within the organization. User requirements are gathered, then later is followed by the rest of the development processes. During the last stage of software development; Implementation and Maintenance, some organizations fail to maintain the customers and especially the projects that have been deployed. One of the reasons could be because of the poor management of the organizations' resources. This project is a proposal for Speedminer Sdn. Bhd. to solve their problems of using manual system to allocate resources to maintain the customers despite the fact that they provide software solutions to other organizations. The proposed solution will adapt the flexibility of lightweight software development, also known as Agile Software Development Methodologies. While there are many methodologies to choose from, but the top three of the Agile methodologies are Scrum, Extreme Programming and Kanban. Even though the said methodologies shared the same principles, but they are different on some parameters. Scrum was the development approach that has been taken to develop the proposed system. Upon the completion and deployment of the system at Speedminer Sdn. Bhd, many staffs can benefit from the system; especially the management, project managers and supervisors. The development of the web-based system has achieved all three objectives defined in the earlier chapter. It is recommended that for future extension of the project, a mobile version is developed. Future development should also consider the layout or look-and-feel for other devices like Tab or smartphones.

ACKNOWLEDGEMENT

First and foremost, the deepest gratitude of all shall be bestowed to Allah the Almighty and The Merciful for all the insight which He gave to us that lead to the completion of this research. Without His blessings and consent, I might not have enough courage and determination to complete this research. All my thanks and appreciation will be lay upon Him.

My deepest gratitude is extended to Assoc. Prof. Dr. Anitawati Mohd Lokman, for all assistance, advice, guidance, encouragement, new ideas and invaluable support given as my project supervisor for a better quality in my research. Thank you for being such a great mentor. I also would like to express my gratitude and sincere appreciation to Assoc. Prof. Dr. Wan Abdul Rahim Wan Mohd Isa, Assoc. Prof. Dr. Haryani Haron and Assoc. Prof. Rosmah Abdul Latif for their invaluable knowledge, comment and recommendation on how to enhance my research.

Not forgetting very special thanks to all staffs of Speedminer Sdn. Bhd., lecturers, friends and also colleagues of Master of Science (Information Technology) for their support and encouragement during the process of completing this project.

Finally, I would like to express my deepest gratitude to my beloved parents and families for all support and courage towards my success. Without their personal sacrifices and being a constant source for encouragement, especially in the final stages, this thesis would not have been possible.

Thank You.

TABLE OF CONTENTS

	Page
AUTHOR'S DECLARATION	ii
ABSTRACT	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENTS	v
LIST OF TABLES	viii
LIST OF FIGURES	ix
CHAPTER ONE: INTRODUCTION	
1.1 Introduction	1
1.2 Research Background	1
1.3 Problem Statement	2
1.4 Research Questions	3
1.5 Research Objectives	3
1.6 Research Scope	3
1.7 Research Significance	4
1.8 Organization Background	4
1.9 Summary	6
CHAPTER TWO: LITERATURE REVIEW	
2.1 Introduction	7
2.2 Web Systems Engineering	7
2.3 Preventive Maintenance	8
2.4 Traditional versus Agile Software Development	8
2.5 Agile Software Development Methodologies	9

2.6	Benefits	of	Agile	Methodologies	10
2.7	Types	of	Agile	Methodologies	10
	2.7.1	Scrum			11
	2.7.2	Extreme Programming (XP)			12
	2.7.3	Kanban			13
2.8	Limitation	of	Agile	Methodologies	15
2.9	Personal Scrum Development				16
2.10	Other Systems Using Scrum				16
2.11	Summary				17

CHAPTER THREE : DEVELOPMENT METHOD

3.1	Introduction				18
3.2	Scrum Development Framework				18
	3.2.1	Product Backlog			18
	3.2.2	Sprint Planning Meeting			20
	3.2.3	Sprint Backlog			20
	3.2.4	Daily Scrum Meeting			21
	3.2.5	Sprint Review			22
	3.2.6	Sprint Retrospective			22
3.3	Hardware and Software Specifications				22
3.4	Summary				23

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1	Introduction				24
4.2	Objective No. 1: To identify the requirements for maintenance management for Speedminer Sdn Bhd				24
4.3	Objective No. 2: To design and develop a maintenance management system for Speedminer Sdn Bhd				26