

UNIVERSITI TEKNOLOGI MARA

**DEVELOPMENT OF ASNAF
LOCATOR MOBILE APPLICATION
(ALMA) FOR LEMBAGA ZAKAT
SELANGOR USING LEAN-KANBAN
METHOD**

**MOHAMAD ZULRIDZWAN BIN MOHAMAD
BASIRAN**

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

January 2015

ABSTRACT

This project tries to propose a solution to the problems encountered by Lembaga Zakat Selangor (LZS) in identifying the eligible recipient of zakat funds. Lembaga Zakat Selangor is the authority in the state of Selangor responsible to collect alms from the people of Selangor and distribute the funds to the needy and other eligible recipients according to the Islamic Sharia law. There are many problems proposed by other researchers regarding people that are supposed to receive help from LZS but did not receive it due the miscommunications of information. The researcher tried to utilize the recent popular adoption of mobile application and crowdsourcing technology to solve this problem. Mobile application promises huge potential to improving people's lives supported by ubiquitous broadband internet connections. This project shall produce an application that allows the user to record the problems and locations of people in need of assistance especially from LZS so the institution can take actions to alleviate the difficult situations. In addition, the recent trend in software development is the gaining support of Agile and Lean software development methodologies. This research shall demonstrate the use of the combination of Lean and Agile using Kanban for mobile application development. The methodology is using the best practices suggested by other researchers for Lean Software Development combined with the use of Kanban board. This methodology is known as Lean-Kanban.

Keywords: Android, Mobile Application, Lean, Kanban, Zakat

ACKNOWLEDGEMENT

“In the name of Allah, the most gracious, the most compassionate”

I am thankful to Allah the most knowledgeable the most wise for his blessings that I was able to complete this project. His gifts of knowledge to me enabled me to solve some of the most difficult problems that I encountered throughout this project.

I would like to thank my teachers and lecturers for giving me guidance and advice throughout my entire study period in this university especially Madam Nalini Dharmarajan and Dr. Wan Abdul Rahim as the immediate lecturers for this project. I also wish to express my appreciation to Mr. Zaharuddin Kadirion from Lembaga Zakat Selangor for his cooperation in helping me to complete this project.

I am also grateful to the members of my family, colleagues and friends whose ideas and support encouraged me to strive harder in work and study. I have learned a lot from them and hope their good deeds will be accepted and always be remembered.

TABLE OF CONTENTS

	Page
STUDENT'S DECLARATION	i
CONFIRMATION BY SUPERVISOR	ii
CONFIRMATION BY EXAMINER	iii
ABSTRACT	iv
ACKNOWLEDGEMENT	v
TABLE OF CONTENTS	vi
LIST OF TABLE	ix
LIST OF FIGURE	x
CHAPTER 1: INTRODUCTION	1
1.1 Research Background	1
1.2 Problem Statement	2
1.3 Research Objectives	3
1.4 Research Questions	3
1.5 Significance Of Research	3
1.6 Scope & Limitation Of Research	4
CHAPTER 2: LITERATURE REVIEW	5
2.1 The Concept Of <i>Zakat</i>	5
2.2 Social Capital, Social Media And Crowdsourcing	6
2.3 Agile Software Development	7
2.3.1 Scrum	9
2.3.2 Extreme Programming (XP)	11
2.4 Lean Software Development	14
2.4.1 Kanban	18
2.5 Comparison Between Agile And Lean Software Development	20
2.6 Comparison Between Scrum, Xp And Lean-Kanban	22
2.7 Foundation For Project Implementation	25

2.7.1 Mobile Application Platform	25
2.7.2 Implementation Of Lean-Kanban Method	26
CHAPTER 3: PROJECT METHODOLOGY	28
3.1 Project Phases	28
3.1.1 Exploration Phase	28
3.1.2 Planning Phase	29
3.1.3 Development Phase	29
3.1.4 Delivery Phase	29
3.1.5 Throughout the Phases	30
3.2 Project Plan	30
3.3 Conceptual Framework Of Mobile Application Development	
Using Lean-Kanban	30
3.4 Conceptual Illustration Of The Asnaf Locator Mobile Application (Alma)	31
3.5 Research Instruments & Data Collection	32
CHAPTER 4: RESULTS	33
4.1 Introduction	33
4.2 Objective 1: Determining System Requirements	33
4.3 Objective 2: Mobile Application Development Using Lean-Kanban	34
4.3.1 Data Model For Alma	34
4.3.2 Software Requirements	36
4.2.3 WAMP Server for Data Storage and Retrieval	36
4.3.4 Portable Kanban for Project Planning	38
4.3.5 Android Developer Tools for Short Iterative Development	41
4.3.6 Creation of the Android Application Project	47
4.3.7 Google Map API for Developing Map Application	48
4.3.8 Eclipse Integration with Github Source Code Management System	51
4.3.9 Unit Testing to Reduce Defects	58
4.3.10 Less Code: Code Reusability and Efficiency	62
4.3.11 Jenkins Continuous Integration for Automated Testing and Scripted Builds	63